DOCUMENT RESUME

ED 401 100 SE 057 348

AUTHOR	Cox, Charles; And Others
TITLE	Oklahoma Ag in the Classroom, K-2. Book 2: Science, Social Studies, Visual Arts. Guides and Activities for Oklahoma Teachers.
INSTITUTION	Oklahoma State Cooperative Extension Service, Stillwater. 4-H Youth Development Dept.; Oklahoma State Dept. of Agriculture, Oklahoma City.
PUB DATE	Dec 92
NOTE	252p.; For Book 1, see SE 057 347. Also subtitled "Student Activities and Teacher Guides, Grades K-2." For book covering grades 3-4, see SE 057 349.
AVAILABLE FROM	Oklahoma State 4-H Office, Attn: AITC Orders, Oklahoma State University, 205 Poultry Science Building, Stillwater, OK 74078.
PUB TYPE	Guides - Classroom Use - Teaching Guides (For Teacher) (052)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Agricultural Education; *Agriculture; Environmental Education; *Food; *Interdisciplinary Approach; Natural Resources; Primary Education; Science Activities; Sciences; Social Studies; Visual Arts
IDENTIFIERS	Oklahoma

ABSTRACT

Oklahoma Ag in the Classroom is a program of the Oklahoma Department of Agriculture and the Cooperative Extension Service that aims at providing educators with opportunities to help youth understand the importance of agriculture in everyday life. This book includes a collection of ready-to-use teacher guides and activity sheets that can be used to integrate agriculture into school subjects in such a way that students become "ag-literate" while learning language arts, reading, information skills, mathematics, science, social studies, and visual arts. The lessons in this book, targeted at grades K-2, are designed to supplement existing curricula and are arranged by subject matter area. The subject areas in this book include science, social studies, and visual arts. Lessons are arranged by level of difficulty within each subject area and include the following: subject area, grade level, concept, commodity, learner outcome, learner objective, lesson, resources, evaluation, related activities, and student worksheets. A glossary, pattern pages, suggestions for requesting assistance, writing pages, and resource lists are included. (JRH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

OKLAHOMA

AG IN THE CLASSROOM

K-2

BOOK 2

ED 401 100

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN OTHER THAN PAPER COPY HAS BEEN GRANTED BY
C.B. Cox
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

BEST COPY AVAILABLE

AG IN THE CLASSROOM

STUDENT ACTIVITIES AND TEACHER GUIDES

GRADES K-2

Ag in the Classroom is jointly administered by the Oklahoma 4-H Youth Development Department, Cooperative Extension Service, and by the Oklahoma Department of Agriculture

Purchasing Additional Copies

Additional copies of the Ag in the Classroom, Unit 1 (K-2) curriculum may be purchased by writing to the:

Oklahoma State 4-H Office
205 Poultry Science Building
Oklahoma State University
Stillwater, OK 74078

Attn: AITC Orders

The cost per two-book set for orders placed before June 30, 1994, will be $15. After that date check with the same address, or call (405) 744-8887 for current prices.

Oklahoma State Cooperative Extension Service offers its programs to all persons, regardless of race, color, national origin, religion, sex, age or handicap, and is an equal opportunity employer. Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U. S. Department of Agriculture, Charles B. Browning, director of Cooperative Extension Service, Stillwater, OK. This publication is printed and issued by Oklahoma State University as authorized by the Dean of the Division of Agricultural Sciences and Natural Resources, in cooperation with the Oklahoma Department of Agriculture, the Oklahoma Department of Education and the Oklahoma Ag in the Classroom Foundation and its affiliated members and has been prepared and distributed at a cost of $40,391 for 5,000 copies. 12-92 4-H.

TABLE OF CONTENTS

BOOK TWO

SCIENCE

MEAT WE EAT ..... S 1
OUR BASIC FOODS ..... S 2
PEANUT BUTTER AND... ..... S 3
PLANTS LOVE AIR ..... S 4
POWERFUL POTATO ..... S 5
READY, SET, PLANT! ..... S 6
SEED SEARCH ..... S 7
SEEDS - SEE HOW THEY GROW ..... S 8
THE WOOL SYMBOL ..... S 9
FLUFFY FEATHERS ..... S 10
ANIMAL NAMES ..... S 11
LIVING OR NONLIVING ..... S 12
IS IT JUST DIRT? ..... S 13
A CHANGE OF SEASON ..... S 14
CARROT BASKETS ..... S 15
COMMON KINDS OF INSECTS ..... S 16
DAIRY OR BEEF? ..... S 17
HOME, SWEET NEST ..... S 18
HOW SEEDS ARE SCATTERED ..... S 19
MADE FROM ANIMALS ..... S 20
PLANT PARTS WE EAT ..... S 21
TOMATO PLANT PARTS ..... S 22
WET AND WOOLY ..... S 23
WHO'S WHO? ..... S 24
BABY PEANUT PLANTS ..... S 25
BEEF IS GOOD FOR YOU ..... S 26
DO ANIMALS POLLUTE...? ..... S 27
FOOD GROUPS ..... S 28
HEALTHY DECISIONS ..... S 29
PIZZA PARTS ..... S 30
PUMP UP WITH POPCORN ..... S 31
THE WONDERFUL WATER CYCLE ..... S 32
WE FURNISH YOUR FOOD ..... S 33
WHERE'S THE BEEF? ..... S 34

SOCIAL STUDIES

SEEDS FOR THE SEASON ..... SS 1
OKLAHOMA FARM COLORS ..... SS 2
I'M A FARMER. I'M A RANCHER. ..... SS 3
PECAN FINGER PRINTS ..... SS 4
FACE YOUR FEELINGS ..... SS 5
OFF TO WORK ..... SS 6
OKLAHOMA FORESTS ..... SS 7
POP AROUND THE WORLD ..... SS 8

VISUAL ARTS

A PURPLE COW ..... VA 1
LINES IN NATURE ..... VA 2
POTATO PRINTS ..... VA 3

SAND AND SUNFLOWERS ..... VA 4
WHICH ONE IS DIFFERENT? ..... VA 5
WONDERS OF WOOL ..... VA 6
A TALL TIMBER TALE ..... VA 7
AG PUZZLES ..... VA 8
WHO'S IN THE HEN HOUSE? ..... VA 9
HAMBURGER HUNT ..... VA 10
MOO...SAID GRADY THE COW ..... VA 11
WEAVING WOOL ..... VA 12
I LIKE IT! ..... VA 13

APPENDICES

Glossary ..... Glossary 1
Suggestions for Requesting Assistance ..... Information 1
Resources ..... Resources 1
Oklahoma Ag in the Classroom Concepts ..... Concept 1
Lessons by Commodity ..... Index 1
Lessons by Ag in the Classroom Concept ..... Index 2
Lessons by Grade ..... Index 3
Lessons by Title ..... Index 4
Pattern Pages ..... Pattern 1
Writing Pages ..... Writing 1
Miscellaneous Pages ..... Miscellaneous 1

BOOK ONE

Acknowledgments ..... *II*
Preface ..... *III*
Organization of the Materials ..... *IV*
Response Page ..... *V*
Table of Contents ..... *VI*

LANGUAGE ARTS

AG - WHAT IS IT? ..... LA 1
LISTEN AND LEARN ..... LA 2
LISTENING TO DIRECTIONS ..... LA 3
COLORS ON THE FARM ..... LA 4
CHECK YOUR CHICKS ..... LA 5
DELICIOUS DAIRY ..... LA 6
FARM ALPHABET ..... LA 7
FARM TALK ..... LA 8
ABC FARM ..... LA 9
RANCH AND FARM BOOKLETS ..... LA 10
THIS IS A COW ..... LA 11
WHICH CAME FIRST, THE CHICKEN OR THE EGG? ..... LA 12
MIXED-UP MARKERS ..... LA 13
FROM SEED TO TREE ..... LA 14

READING

WHAT HAPPENED? ..... R 1
MEET GRADY THE COW ..... R 2
BEEF - FROM FARM TO TABLE ..... R 3
MY FARM FRIEND ..... R 4

SEEDS WE EAT ..... R 5
TREE PARTS ..... R 6
WATER - WHAT'S ITS MATTER? ..... R 7

INFORMATION SKILLS

BEANS IN A BAG ..... IS 1
GET GROWING ..... IS 2
THE STORY OF MILK ..... IS 3
FIND THE FARM ANIMALS ..... IS 4
HAVE YOU THE TIME OF DAY? ..... IS 5
SHORT STORIES ..... IS 6
SPROUTING ..... IS 7
THE MILK ROUTE ..... IS 8
SOMETHING'S HIDING INSIDE ..... IS 9

MATHEMATICS

BABY ANIMALS TO COUNT ..... M 1
COUNT THE ANIMALS ..... M 2
EGG-CITING NUMBERS ..... M 3
PUMPKIN FACES ..... M 4
THE REAL SEAL ..... M 5
THE RIGHT SIZE ..... M 6
FIVE PLUMP PIGS ..... M 7
COUNT ME IN ..... M 8
COUNT THE COWS ..... M 9
THE COTTON SYMBOL ..... M 10
DIPPING INTO DAIRY ..... M 11
AG MATH ..... M 12
DOLLARS AND CENTS ..... M 13
EGG MAZE: COUNTING BY TWOS, THREES AND FIVES ..... M 14
GROWING GRAPHS ..... M 15
MATCH THE SHAPES ..... M 16
MOO'S WEIGHT ..... M 17
PEANUT PATCH ..... M 18
SEEDLINGS ..... M 19
TATER TOTS ..... M 20
TIME TO EAT ..... M 21
PUMPKINS BY THE POUND ..... M 22

APPENDICES

Glossary ..... Glossary 1

MEAT WE EAT

S 1

SUBJECT: Science

GRADES: K-2

CONCEPT: I

COMMODITY: Beef

LEARNER OUTCOME: Kindergarten. 10. The student will learn to discuss the basic health and nutritional needs of human beings.

LEARNER OBJECTIVE

Students will learn that meat (beef) comes from cattle.

LESSON

A. Step-by-Step Instructions

1. Read the background information to your students, and hand out student worksheets.
2. Have students color the pictures of the steer and the cuts of meat.
3. Help students cut and paste the cuts of meat.
4. Let the students draw grass, clouds, etc., to complete the picture.

B. Background

Cattle give us good meat to eat. We call this meat beef. Beef is good to eat and good for you. Some of the different kinds of beef are hamburger meat, steak and roast. Beef provides protein to help muscles grow strong. Beef is included in the meat group, one of the basic food groups. Our bodies need two three-ounce servings of meat each day.

Source: Oklahoma Beef Industry Council

C. Resources

Books

Jacobsen, Karen, *Farm Animals, A True New Book Series,* Children's Press, 1981.

Grossman, Bill, *Donna O'Neeshuck Was Chased by Some Cows,* Harper Trophy, 1988.

Peinick, H., and Nancy Sears, *Farm Animals,* Random House, Inc., 1977.

Additional Resources

"Farm Life," Right On Programs, 755 New York Ave., Huntington, NY 11743 (Apple or Commodore software disk, $25, plus $4 for handling).

"My Family's Farm," Illinois Farm Bureau, Field Services Division, 1701 Tawanda Ave., Bloomington, IL 61701.

"Twelve Myths and Facts," National Cattlemen's Association, 5420 S. Quebec St., Englewood, CO 80155 (videotape for grades 1-3 and 4-6, $15).

D. Evaluation

Ask students if they have eaten any beef this week and, if so, what kind?

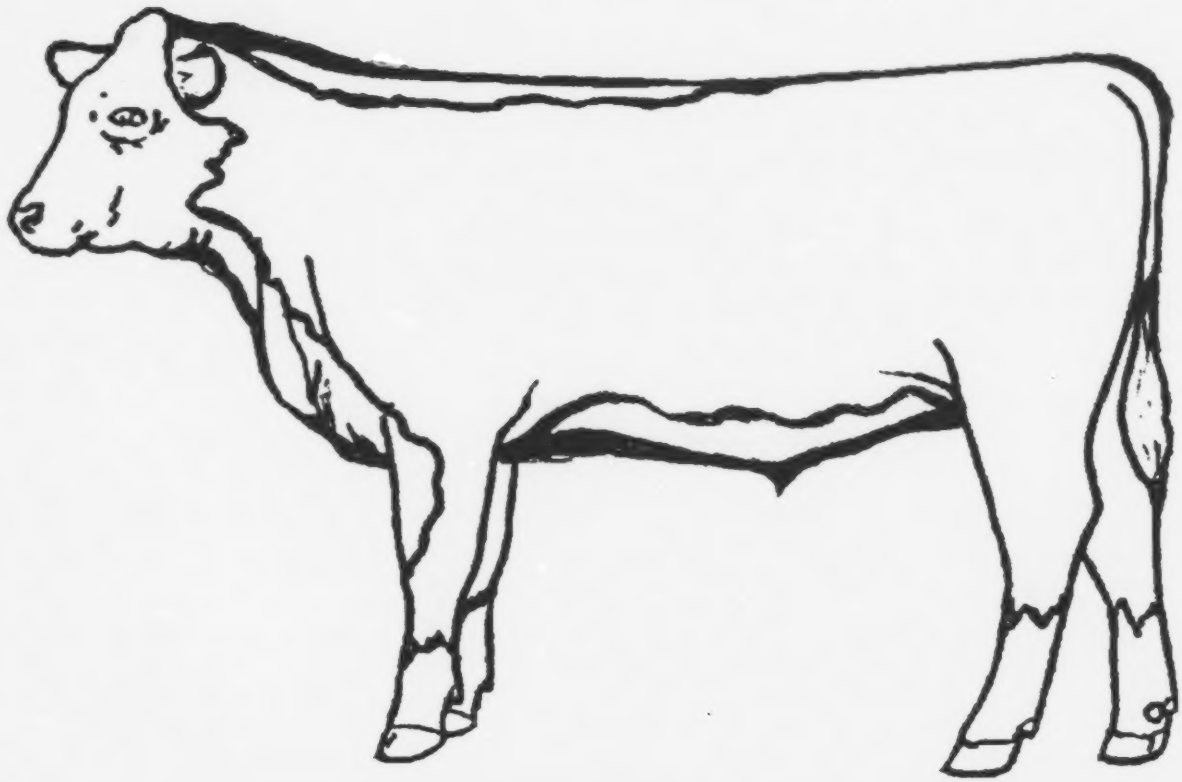
E. Related Activities

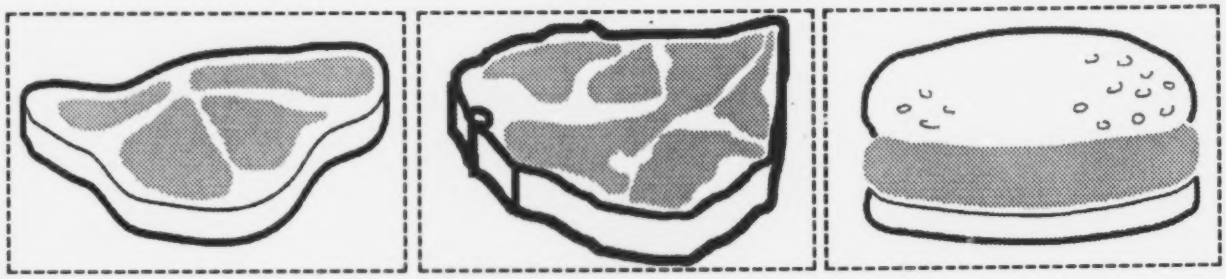
1. Have students cut pictures of cattle or meat from magazines. Make a collage for the bulletin board.
2. Have students identify the cuts of meat pictured on the student worksheet (from left to right, steak, roast, hamburger patty and bun). The bun is not a product of beef cattle. Ask students if they know what agricultural product is used to make the bun (wheat).

Name _____

Meat We Eat

Color the steer and the cuts of meat. Cut along the dotted lines, and glue the meat onto the body.





Produced by Oklahoma State University Cooperative Extension Service
in cooperation wtih the Oklahoma Department of Agriculture, 1992

Ag in the Classroom

OUR BASIC FOODS

S 2

SUBJECT: Science

GRADES: K-2

CONCEPT: I

COMMODITY: Foods

LEARNER OUTCOME:

Grades One through Two: II. A. Students will, given a set of objects, organisms or events, identify the properties by which they could be ordered.

LEARNER OBJECTIVE

Students will recognize which foods belong in which food group.

LESSON

A. Step-by-Step Instructions

1. Share the background information with the students.
2. Hand out student worksheets. Instruct the students to circle the items in each set that do not belong to that food group.

B. Background

Everything you eat falls into one of these food groups: Milk; Meat; Vegetable/Fruit; Bread/Cereal; and Other (sugary and fatty foods, like potato chips and candy). Most of the food we eat every day should come from the first four groups. These foods form the foundation of a good diet. That doesn't mean we can't eat things like potato chips and candy. It just means we should build a good foundation first, then add the extras.

Source: OSU College of Human Environmental Sciences, Dept. of Nutritional Sciences

C. Resources

Books

Bond, Shirley, and Janet Cook, *Where Food Comes From,* EDC Publishing, 1989.

Polacco, Patricia, *Just Plain Fancy,* A Bantam Little Rooster Book, 1990.

Schnieper, Claudia, *An Apple Tree Through the Year,* Carolrhoda, 1989.

Showers, Paul, *What Happens to a Hamburger,* Harper Trophy, 1985.

Stone Soup and Other Stories, New Way Learning with Literature, Violet Level. Steck-Vaughn, 1987.

D. Evaluation

Review the completed activity sheets for correctness. The items which do not belong are: 1. cheese; 2. orange; 3. cake; and 4. potato chips.

E. Related Activities

Prepare some nutritious snacks representing the four food groups. Make sure everyone's hands are washed with soap and water before starting. Here are a few suggestions:

Bugs on a Log (Vegetable-Meat) - Fill some 4-inch sections of celery (washed and dried) with peanut butter. Press raisins here and there to make "bugs on a log."

Cheese Pops (Milk-Cereal) - Cut cheese in cubes and insert a pretzel stick to form "cheese pops."

Fruit Pops (Fruit-Cereal) - Substitute pieces of fruit for the cheese, above.

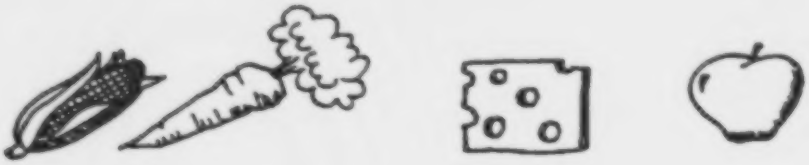
Moon Balls (Milk-Cereal) - Mix together one cup nonfat dry milk, one-half cup honey and one-half cup peanut butter. Form into small balls about the size of a walnut and roll in crushed granola (about one-half cup). Makes about three dozen.

Name _____

Our Basic Foods

Circle the item in each set that does not belong to the food group listed. Color the ones that are in the correct food group.

Fruit and Vegetable



Bread and Cereal

Meat

Milk

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

PEANUT BUTTER AND . . . S 3

SUBJECT: Science **GRADES:** K-2

CONCEPT: I **COMMODITY:** Peanuts

LEARNER OUTCOME

Grades One through Two: I. A. Students will, given objects, organisms, or events, identify the properties by which they could be ordered..

LEARNER OBJECTIVE

Students will examine and discover the characteristics of the peanut, a crop commonly grown in southern Oklahoma.

LESSON (No student worksheet is needed for this lesson.)

A. Step-by-Step Instructions

1. Give each student two or three roasted peanuts in their shells.
2. Ask the following questions: *What are these objects called? Describe how they look and feel. How are they alike? How are they different? Shake one. What do you hear? Which one is smallest? Which one is largest?*
3. Have students predict what is inside. Then have them open the peanut shells, count the peanuts in each one and eat them.
4. Discuss what foods contain peanuts (peanut butter, candy, cookies, cereal).
5. Make ***peanut butter*** as a classroom project: Put one cup of roasted peanuts and one teaspoon of peanut oil in a blender or food processor. The peanuts will blend better if the peanut oil is added. This recipe will make enough peanut butter for two slices of bread.

B. Background

Americans eat about three pounds of peanut butter per person every year. About half of all peanuts eaten in the U.S. are eaten as peanut butter. Peanut butter doesn't cost very much and is very good for you. A peanut butter sandwich, a glass of milk and some fruit make a very nutritious meal.

Source: OSU Cooperative Extension Service, Nutritional Sciences

C. Resources

Books

Ehlert, Lois, *Eating the Alphabet: Fruits and Vegetables from A to Z,* Harcourt, Brace, Jovanovich, 1990.

Walker, Lois, *Get Growing,* John Wiley & Sons, 1990.

Additional Resources

National Peanut Council, 101 Peyton St., Ste. 301, Alexandria, VA 22314,(703) 838-9500.

Oklahoma Peanut Commission, Box D, Madill, OK 73446.

D. Evaluation

Did the students examine the peanuts and answer the questions? Did they enjoy making the peanut butter?

E. Related Activities

1. Try the class-made peanut butter with different foods (bananas, celery, carrots, crackers, marshmallows).
2. Save the unbroken peanut shells and set up an art center. Glue the shells onto sturdy paper to form people or other pictures.
3. Have a taste test. Have students compare the class-made peanut butter with commercial brands purchased at the store.

PLANTS LOVE AIR

S 4

SUBJECT: Science

GRADES: K-2

CONCEPT: IV

COMMODITY: Horticulture

LEARNER OUTCOME

Grade One: I. B. 2. The student will observe, describe, and report the characteristics of plants and animals.

LEARNER OBJECTIVE

To show students how air is needed for plant development.

LESSON (No student worksheet is needed with this lesson.)

A. Step-by-Step Instructions

1. Bring a healthy broad-leafed plant, such as a geranium, to class.
2. Cover one leaf of the plant with a clear sandwich bag. Gently squeeze the air from the bag, then secure the deflated bag with a twist tie around the the leaf stem.
3. Place the plant in a sunny window, and have students predict what will happen to the leaf.
4. After one week remove the bag, and examine the leaf. How does it look?

B. Background

Plants need air to live. Plants use the carbon dioxide from the air and produce oxygen that animals like us breath. Without air, plants become weak and die.

Plants can get too much air, though. Oklahoma winds during the growing season can be hard on plants. Strong winds can break plants, and dry winds in the summertime will dry them up.

Source: OSU Cooperative Extension Service, Horticulture Science Dept.

C. Resources

Books

Barden, Helen, *Busy Little Gardener*, Jelly Bean, 1990.

Claridge, Marit, and John Shackell, *A Simple Introduction to Living Things*, Usborne, 1985.

Additional Resources

The Growing Classroom: Teacher's Guide to Activities, General Feed and Seed/Let's Get Growing, 1900-B Commercial Way, Santa Cruz, CA 94065 ($33.75, plus $4 shipping).

Growlab: A Complete Guide to Gardening in the Classroom, National Gardening Association, 180 Flynn Ave., Burlington, VT 05401 (128-page softbound teacher's book, $14.95, plus $3 shipping).

D. Evaluation

The leaf in the bag will be limp and yellowish-brown.

E. Related Activities

1. Place two broad-leafed plants outdoors on one of Oklahoma's windy days. Find a sheltered spot, near the building, for one of the plants, and place one out in the open. Compare the two at the end of the day.
2. Make *wind socks*. Give each student a strip of construction paper 14 inches

long and six inches wide. Have students glue the ends of the strips together to form circles. Staple strips of crepe paper around the bottom of the circle to make a wind sock. Hang the wind socks outdoors for several days so students can "see" the wind. This activity would be most effective in the early spring, during Oklahoma's windy season.

3. Divide the class into two or three teams. Have each team make paper fans by folding sheets of paper accordian-style. Tell the teams to move the following items across a desktop, using their fans: a feather, a bottle cap, and a leaf. Which item moved the farthest? Why? Which team produced the strongest winds?

POWERFUL POTATO

S 5

SUBJECT: Science

GRADES: K-2

CONCEPT: V

COMMODITY: Horticulture

LEARNER OUTCOME

Grades One through Two: V. A. Students will describe the properties of an object or event in sufficient detail so another person can identify it.

LEARNER OBJECTIVE

The student will observe the growth process of a potato plant.

LESSON (No student worksheet is needed for this lesson.)

A. Step-by-Step Instructions

1. Plant a potato in a large clay pot or gallon bucket. You may purchase seed potatoes from a seed outlet in early spring or use a potato from home that has started to sprout. Make sure your container has drainage holes.
2. Place the potato, eye end up, in moist potting soil. Cover the potato with more soil until the pot is half full. Place the pot in a sunny spot. Water when dry.
3. As shoots appear and get tall, tie them to a stake. When flowers start to appear, stop watering to prevent the potatoes from rotting. As the potatoes grow they may push up the dirt around the stem or even crack the container in which they are planted.
4. After six to eight weeks, when the top of the potato plant starts to die, harvest them by gently pulling the plant out of the pot. Lay the plant on newspaper, and have students sift through the dirt to find the potatoes.
5. Use your crop to make a delicious treat--French-fried potatoes, potato salad, or potato soup.

B. Background

Potatoes were first grown by Indians in the Andes Mountains of Bolivia and Peru as early as 200 A.D. Archaeologists have found pictures of potato plants in designs on ancient pottery. The Indians preserved the potatoes by trampling them and then drying them.

Even though potatoes were first grown in South America, people in North America did not start eating them until after they became a popular food in Europe. European explorers carried potatoes from South America to Europe in 1570. About 150 years later the rulers of several European countries ordered their people to start growing potatoes. In Ireland, potatoes became the main food for the people. In the 1840s disease wiped out the potato crop in Ireland for two years in a row. Many Irish people moved to America then, because they had no food to eat.

Most of the world's potatoes today are grown in Europe. Potatoes are also grown in all 50 of the United States. The biggest potato-producing state is Idaho. In Oklahoma, many people grow potatoes in their home gardens and harvest them while the tubers are still small. These are called "new potatoes." The average American eats around 65 pounds of potatoes a year.

Source: OSU Cooperative Extension Service, Horticulture Department

C. Resources

Books

Amery, Heather, and Annie Civardi, *The Know How Book of Print and Paint*, EDC, 1977.

Bourgeois, Paulette, *The Amazing Potato Book*, Addison Wesley, 1991.
Ehlert, Lois, *Growing Vegetable Soup*, Harcourt, Brace, Jovanovich, 1988.
McDonald, Megan, *The Potato Man*, Orchard, 1991.
Selsam, Millicent E., *More Potatoes*, Harper and Row, 1972.
Watts, Barrie, *Potato*, Silver-Burdett, 1987.

D. Evaluation
Did the students enjoy planting and harvesting the potatoes?

E. Related Activities
1. Bring in a baking potato. Set it out on a paper plate. Have your class keep track of how many days pass before the eyes begin to sprout.
2. Make up a classroom story explaining why a potato needs so many eyes.
3. Review your school menu to see how many times a week potatoes are used. What are the different ways they are cooked?

READY, SET, PLANT!

S 6

SUBJECT: Science

GRADES: K-2

CONCEPT: V

COMMODITY: Horticulture

LEARNER OUTCOME

Grades One through Two. I.C. Students will, given conditions before, during and after an event, identify qualitative and quantitative changes.

LEARNER OBJECTIVE

The student will learn the basic steps a gardener takes in planting seeds.

LESSON (Seeds other than tomato plant seeds may be used in this lesson.)

A. Step-by-Step Instructions

1. Give each student two or three tomato seeds in a small container. Have students examine the seeds and try to identify them.
2. Pour a small amount of soil onto each student's desk or into his or her hands. Have students describe the soil. *What is it made of? What color is it? How does it smell?*
3. Pass out planting containers (plastic or paper cups with drain holes punched in the bottom) and have students fill the containers with soil.
4. Have students poke holes about one-inch deep into the soil in their containers, drop the seeds in, cover them with soil and pat the soil down.
5. Provide spray bottles for students to moisten the soil in their containers.
6. Have students place their plants in a sunny window and water them when soil is dry to the touch.
7. In five to ten weeks a plant will emerge in each container. If more than one plant germinates, have students carefully pull out all but the healthiest plant.

B. Background

Oklahoma gardeners grow tomatoes in their backyard gardens during the spring and summer months. Tomatoes are harvested when they begin to turn red. Most tomatoes grown in Oklahoma are sold at local farmers' markets. Tomatoes are a base in many common foods, such as ketchup, pizza sauce, and spaghetti sauce. The average person consumes 70 pounds of tomatoes each year.

Source: OSU Cooperative Extension Service, Horticulture Dept.

C. Resources

Books

Kovalski, Maryann, *Pizza for Breakfast,* Morrow Junior Books, 1990.
Modesitt Jeanne, *Vegetable Soup,* Macmillan, 1988.
Watts, Barrie, *Tomato,* Silver-Burdett, 1987.
Webster, Vera, *Plant Experiments,* Children's Press, 1982.
Wilkes, Angela, *Growing Things,* EDC, 1984.

Additional Resources

Growlab: A Complete Guide to Gardening in the Classroom, National Gardening Association, 180 Flynn Ave., Burlington, VT 05401 ($14.95, plus $3 shipping).

D. Evaluation

Did the student glue the pictures in order on the cycle? Did he/she write the correct word that explains the picture in the blank?

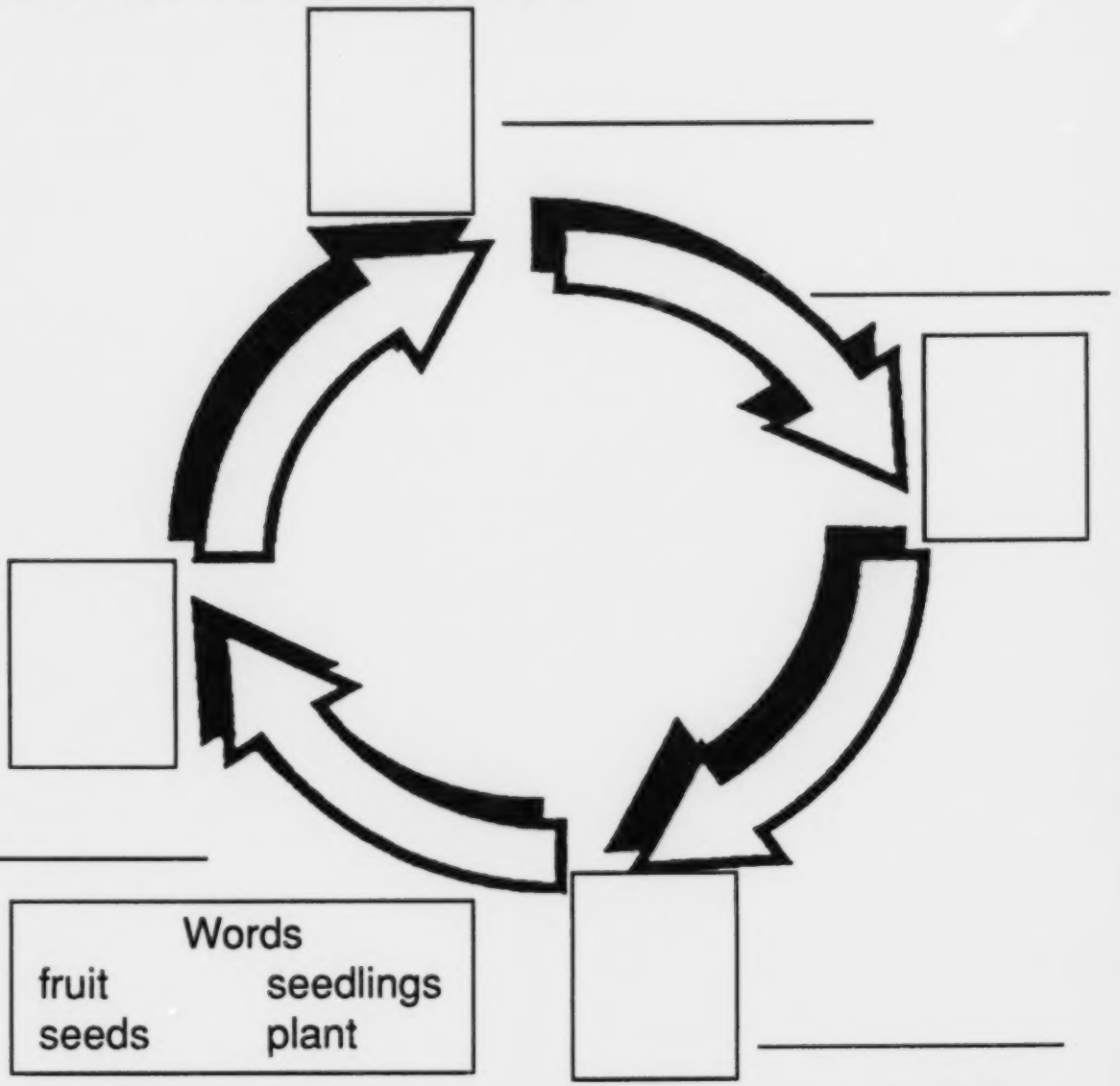
E. Related Activities

1. Use the "Watch It Grow" calendar in the back of the book to keep a record of the plant's development.
2. Bring a scale to class. Weigh different objects in the classroom, trying to get as close as possible to 70 pounds. Explain to students that the average person consumes tomato products equal to that weight every year.
3. Keep a progressive list of tomato products found by class members.
4. Invite local gardeners, greenhouse owners or county Extension agents to visit the class and offer tips for growing healthy plants.

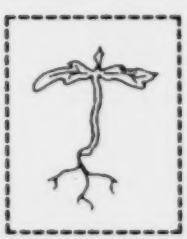
Name _____

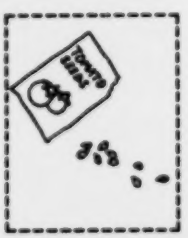
Ready, Set, Plant

Put the pictures in order to complete this cycle. Write the correct word in the space provided.



Words	
fruit	seedlings
seeds	plant





Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

SEED SEARCH

S 7

SUBJECT: Science

GRADES: K-2

CONCEPT: I

COMMODITY: Horticulture

LEARNER OUTCOME

Grades One through Two: I. A. Students will, given objects, organisms or events, identify the characteristics that are similar or different.

LEARNER OBJECTIVE

To help the student discover different types of seeds and the fruit or vegetable from which they come.

LESSON

A. Step-by-Step Instructions (No student worksheet is needed for this lesson.)

1. Before the lesson, gather the following items: unshelled peanuts; pea pods; green beans; apples; grapefruits; a watermelon; tomatoes; green peppers; a knife; paper plates; chart paper; crayons.
2. Show the fruits and vegetables to students, and discuss what they are and what each has in common. *None of these fruits or vegetables would be here today, if they didn't have what?*
3. Cut open the fruits and vegetables for the students to examine. Remove the seeds and place them on a paper plate. Label the plates with the names of the fruits and vegetables.
4. Have students describe the sizes, shapes and colors of the seeds. *How are the seeds alike? How are they different? Why are seeds important? (When planted, they will produce a new plant.)*
5. Have students count the number of seeds on each paper plate. Show them how to make a bar graph, comparing the number of seeds found in the different fruits and vegetables.
6. Cut the fruit into bite-size pieces for children to enjoy for a snack.

B. Background

Fruits and vegetables have one characteristic in common--seeds. Without seeds there would be no new plants after the old plants died. Eventually there would be no more tomatoes or watermelons or other plants of that kind.

Many of the things that we call "vegetables" are actually fruits to a scientist. The tomato is one example. The fruit is the part of a plant that holds the seeds.

Source: OSU Cooperative Extension Service, Horticulture Department

C. Resources

Books

Balan, Bruce, *The Cherry Migration*, Green Tiger, 1988.
Brown, Elizabeth B., *Vegetables*, Prentice Hall, 1981.
Carle, Eric, *The Very Hungry Caterpillar*, Harper Trophy, 1985.
Day, Jenifer W., *What is a Fruit?* Golden/Western, 1976.
Ehlert, Lois, *Growing Vegetable Soup*, Harcourt, Brace, Jovanovich, 1988.

Additional Resources

"Wee Sprout Package: Growing Sprouts in Water," A Green America Co., P.O. Box 1028, Pagosa Springs, CO 81147, (303) 264-2286 (special package for educators, including growing jar, 16-page story book and sprout mixture, $2 per kit, 40 cents for seed refills, minimum order of one dozen).

National Peanut Council, 101 S. Peyton St., Suite 301, Alexandria, VA 22314.

"The Great Green Bean," Yarnhill County Women for Agriculture, P.O. Box 101 Dayton, OR 77114 (videotape, $12.08).

D. Evaluation

Did students count the seeds correctly? Were students able to complete a class graph, showing the number of seeds in each fruit or vegetable?

E. Related Activities

After students have finished counting, have each student draw a picture of one fruit or vegetable. Instruct students to label their papers "fruit" or "vegetable," whichever is appropriate. Under the drawing, have students write the name of the object. Then have them glue an actual seed of the fruit or vegetable they have drawn to the side of the illustration, and label it "seed."

SEEDS - SEE HOW THEY GROW S 8

SUBJECT: Science **GRADES:** K-2

CONCEPT: IV **COMMODITY:** Horticulture

SUGGESTED LEARNER OUTCOME

Grades One through Two: V. A. The student will describe the properties of an object or event in sufficient detail so another person can identify it.

LEARNER OBJECTIVE

To show students how sunshine helps plants develop.

ACTIVITY

A. Step-by-Step Instructions (No student worksheet is needed for this lesson.)

1. Sprinkle alfalfa or watercress seeds on two dishes in which you have placed wet paper towels.
2. Place one dish in a dark place and the other in a place where it will get plenty of light. Use a spray bottle to keep the paper towels in both dishes damp.
3. After three or four days check and compare seedlings. Discuss the results.

B. Background

Plants contain chlorophyll. Chlorophyll is what makes the plant green. The plant's leaves use the sunlight to produce chlorophyll. Without chlorophyll leaves would be a sick yellow color instead of a healthy green color.

Source: OSU Cooperative Extension Service, Horticulture Dept.

C. Resources

Books

Barden, Helen, *Busy Little Gardener,* Jelly Bean, 1990.

Claridge, Marit, and John Shackell, *A Simple Introduction to Living Things,* Usborne, 1985.

Additional Resources

The Growing Classroom: Teacher's Guide to Activities, General Feed and Seed/Let's Get Growing, 1900-B Commercial Way, Santa Cruz, CA 94065 ($33.75, plus $4 shipping).

Growlab: A Complete Guide to Gardening in the Classroom, National Gardening Association, 180 Flynn Ave., Burlington, VT 05401 (128-page softbound teacher's book, $14.95, plus $3 shipping).

D. Evaluation

The seedlings growing in the light should be green and healthy compared with the ones growing in the dark. However, the seeds growing in the dark will be taller, because they grow upward to search for the light.

E. Related Activities

1. *Are plants sun lovers?* Place a plant in the window. (A geranium would work well.) Leave it there for a couple of days. Notice how the leaves lean toward the sunlight. Turn the leaves away from the light. Notice how in a few more days they readjust their position to get the full sunlight.

THE WOOL SYMBOL

S 9

SUBJECT: Science

GRADES: K-2

CONCEPT: I

COMMODITY: Wool

LEARNER OUTCOME

Grades One through Two: II. C. Students will, given a classification system, identify the properties on which the classification is based.

LEARNER OBJECTIVE

Students will recognize the wool industry symbol on items made from pure new wool.

LESSON

A. Step-by-Step Instructions

1. Draw the wool symbol on the chalkboard, or bring in an article of clothing with the wool symbol pictured on the tag.
2. Share the background materials.
3. Pass out student worksheet. Instruct students to count the wool symbols on the worksheet, and write the number in the blank. Then students may color the wool symbols yellow.

B. Background

It is difficult to tell if something is made from sheep's wool just by looking at it. One way is to read the label. Wool producers have developed a wool symbol which makes it easy for consumers to recognize products made from pure new wool.

Wool is the hair from the sheep. It is a protective coat that keeps the sheep warm and dry. A sheep needs to have its coat sheared once a year, just like you need to get a haircut now and then. Shearing doesn't hurt the sheep. In fact, it makes the sheep look and feel better, just like you, when you get your hair cut.

Source: OSU Cooperative Extension Service, Animal Sciences

C. Resources

Books

Amery, Heather, *The Naughty Sheep,* EDC, 1990.
Demi, *Fleecy Lamb,* Putnam, 1987.
Dixon, Annabelle, *Wool,* Threads Series, Garrett Educational Corp., 1990.
Dunn, Judy, *The Little Lamb,* Random House, 1977.

Additional Resources

American Sheep Industry, 6911 South Yosemite Street, Englewood, CO 80112-1414, (303) 771-3500.
American Wool Council, Wool Education Center, 200 Clayton St., Denver, CO 80206.

D. Evaluation

Were the students able to identify and count the 11 wool symbols on the student worksheet?

E. Related Activities

1. Bring in examples of wool clothing, blankets, caps, etc.
2. Contact the county Extension office in your county for the name of a sheep

producer. Invite the producer to your class to talk about his job and show off his sheep dog or baby lamb.
3. Lanolin is a natural oil produced by the wool of a lamb. It has a smooth and silky feeling. Bring in soaps and lotions containing lanolin for students to handle so they will get the idea of what lanolin is. If possible, bring unwashed raw wool for students to feel and compare with the feel of the soaps and lotions. Discuss why humans would want to use lanolin on their skin.

Name _____

The Wool Symbol

Find the wool symbols. Color them yellow.

How many did you find? _____

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

FLUFFY FEATHERS

S 10

SUBJECT: Science

GRADES: K

CONCEPT: IV

COMMODITY: Poultry

LEARNER OUTCOME

Kindergarten: 6. The student will observe, describe and classify objects according to their common properties.

LEARNER OBJECTIVE

The student will become familiar with different types of poultry found in or around a farm.

LESSON

A. Step-by-Step Instructions (No student worksheet is needed for this lesson.)

1. Bring an assortment of feathers, including down feathers and outer feathers, to class. Have students look at the feathers and compare them for shape, color and size.
2. Bring some items made from feathers to class (quill pens, down jackets or comforters, feather pillows).
3. Share background information.

B. Background

Feathers protect birds from the rain, heat and cold. The birds can fluff them up, just like you fluff a feather pillow. When they do that, the air in between the feathers acts as insulation to protect them from the weather. They can also coat their feathers with oil. This helps make the feathers water repellant and also helps the birds stay warmer.

We use goose feathers in much the same way. Down jackets and comforters are just about the warmest covering you can find. Down feathers are the soft, fluffy feathers underneath the outer feathers on a bird. Goose feathers also make good stuffing for pillows and mattresses.

Feathers come in many different colors and often have pretty patterns. Male birds usually have the most colorful feathers. The colors and beautiful designs help them attract female birds. Since the female bird is usually the one who guards the nest, she needs to be camouflaged. That's why the female bird usually has duller feathers.

Through the ages, people in many different cultures have worn feathers for their beauty. Back in the 1800s and early 1900s, egret feathers were popular as a decoration for women's hats. At one time there was a danger that all the egrets would be killed, because people were killing them to get their feathers.

One kind of egret is the big white bird you see so often in Oklahoma cow pastures. They like to eat the bugs the cattle stir up as they graze. Sometimes they even eat the bugs off the cow's back.

The scissortail flycatcher is Oklahoma's state bird. Its feathers snap open and shut like scissors when it is flying.

Source: OSU Cooperative Extension Service, Forestry Dept.

C. Resources

Books

Berrends, Polly Berrien, *The Case of the Elevator Duck*, Random House, 1973.
Dabcovich, Lydia, *Mrs. Huggins and Her Hen Hannah*, E.P. Dutton, 1985.
Demi, *Cuddly Chick*, Putnam, 1988.

Dunn, Judy, *The Little Duck*, Random House, 1976.
Duvoisin, Roger, *Petunia*, Dragonfly, 1950.
Flack, Marjorie, *The Story About Ping*, Scholastic, 1961.

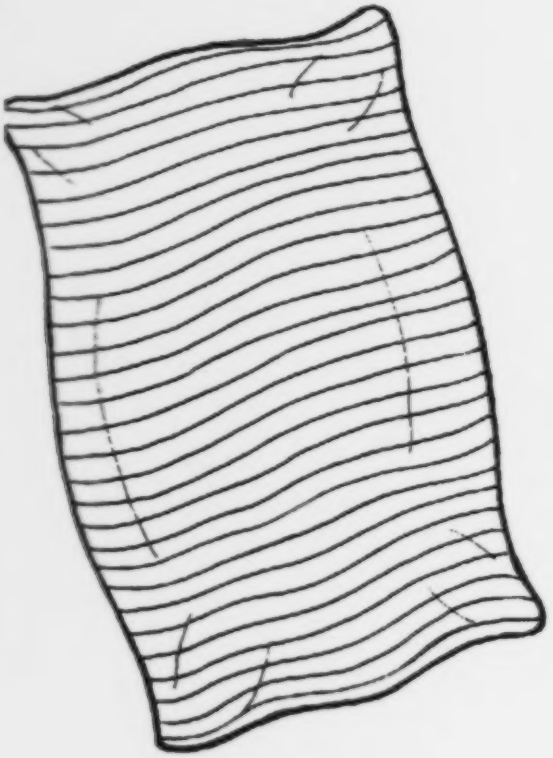
D. Evaluation
The student should have drawn a line from the goose to the pillow, then colored the other pictures.

E. Related Activities
1. Make a classroom display of feathers found by class members. Have students identify and label the feathers.
2. ***Feather Painting*** - Have students paint pictures, using feathers as paint brushes.
3. Use an eye dropper to drop water onto the surface of down feathers and outer feathers. Students should notice that the water beads up on the outer feathers but soaks into the down feathers.

Name _____

Fluffy Feathers

Which animal feathers would we use to make the pillow? Draw a line from that animal to the pillow. Color.



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

ANIMAL NAMES

S 11

SUBJECT: Science

GRADES: K-1

CONCEPT: I

COMMODITY: Farm Animals

LEARNER OUTCOME

Grades One through Two: II A. Students will, given a set of objects, organisms or events, identify the properties by which they could be ordered.

LEARNER OBJECTIVE

To recognize farm animals from pictures and match their pictures with the written names.

LESSON

A. Step-by-Step Instructions

1. Hand out student worksheet and look at the pictures with your students.
2. Have students draw lines from the animal pictures to the animal words.
3. List and discuss the basic needs of the animals featured on the student worksheet.

B. Background

What do all animals need to live? They need food, water, sunlight and shelter? Do all animals need the same things? Do fish need the same things as pigs? Do cows need the same things as frogs? Each animal has its own needs. If they can't get what they need they will die.

C. Resources

Books

Amery, Heather, *What's Happening? On the Farm,* EDC, 1984.

Cartwright, Stephen, *Apple Tree Farm,* Usborne, 1991 (press-out model).

Hajdusiewicz, Babs Bell, *Please Do Feed the Animals,* Steppingstone Series, Steck-Vaughn, 1991.

Pearce, Q.L., and W. J. Pearce, *Nature's Footprints in the Barnyard,* Silver-Burdett, 1990.

Tresselt, Alvin, *Wake Up, FARM!* Lothrop, Lee & Shepard, 1991.

D. Evaluation methods

Are students able to identify the animals listed on the student worksheet? Can the student listen to the initial sound of the animal word and match the picture to the written word?

E. Related Activities

1. Find additional animal pictures to add to those on the student worksheet.
2. Have students alphabetize the names of the animals featured on the student worksheet.

Name _____

Animal Names

Match the name to the picture. *Write the names.*

cat

1. _____

hen

2. _____

farmer

3. _____

bull

4. _____

pig

5. _____

goose

6. _____

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

LIVING OR NONLIVING

S 12

SUBJECT: Science

GRADES: K-1

CONCEPT: V

COMMODITY: Miscellaneous

LEARNER OUTCOME

Grades One through Two: II. D. Students will, given a set of objects, organisms, or events, use observable properties to classify them.

LEARNER OBJECTIVE

The student will learn to classify commonplace things as living or nonliving.

LESSON

A. Step-by-Step Instructions

1. Use the background materials to discuss what is required before something is classified as living.
2. In the classroom, have students identify living and nonliving things. If students understand and can easily identify living and nonliving things, make your questions more difficult. For example, point to a student's desk and ask, *Was any part of this desk at one time a living thing? Identify the part that was once alive.*
3. Hand out student worksheets, and go over the instructions with your students.

B. Background

Plants and animals that are alive have the following things in common: 1) they need food; 2)they need water; 3)they need air; 4) they reproduce. Water and soil are not living things but they do provide homes for things that are alive.

C. Resources

Books

Bjork, Christina, and Lena Anderson, *Linnea's Windowsill Garden*, R & S, 1988.
Carle, Eric, *The Grouchy Ladybug*, Harper Trophy, 1977.
Cole, Joanna, *My Puppy is Born*, Mulberry, 1991.
Lindbergh, Reeve, and Susan Jeffers, *Benjamin's Barn*, Dial Books for Young Readers, 1990.
Pryor, Bonnie, *Greenbrook Farm*, Simon & Schuster, 1991.

Additional Resources

"Cream of the Crop: Resource Newsletter,"California Foundation for Ag in the Classroom, 1601 Exposition Blvd., Sacramento, CA 95815 (free, six-page newsletter containing resources and activities for the classroom.)

D. Evaluation

The student should have crossed out the following pictures of nonliving things: truck; tractor; silo; rainwater; fence; barn; mitt; hay. Point out that some of the nonliving things pictured were once alive (hay, leather baseball mitt, wooden barn and fence).

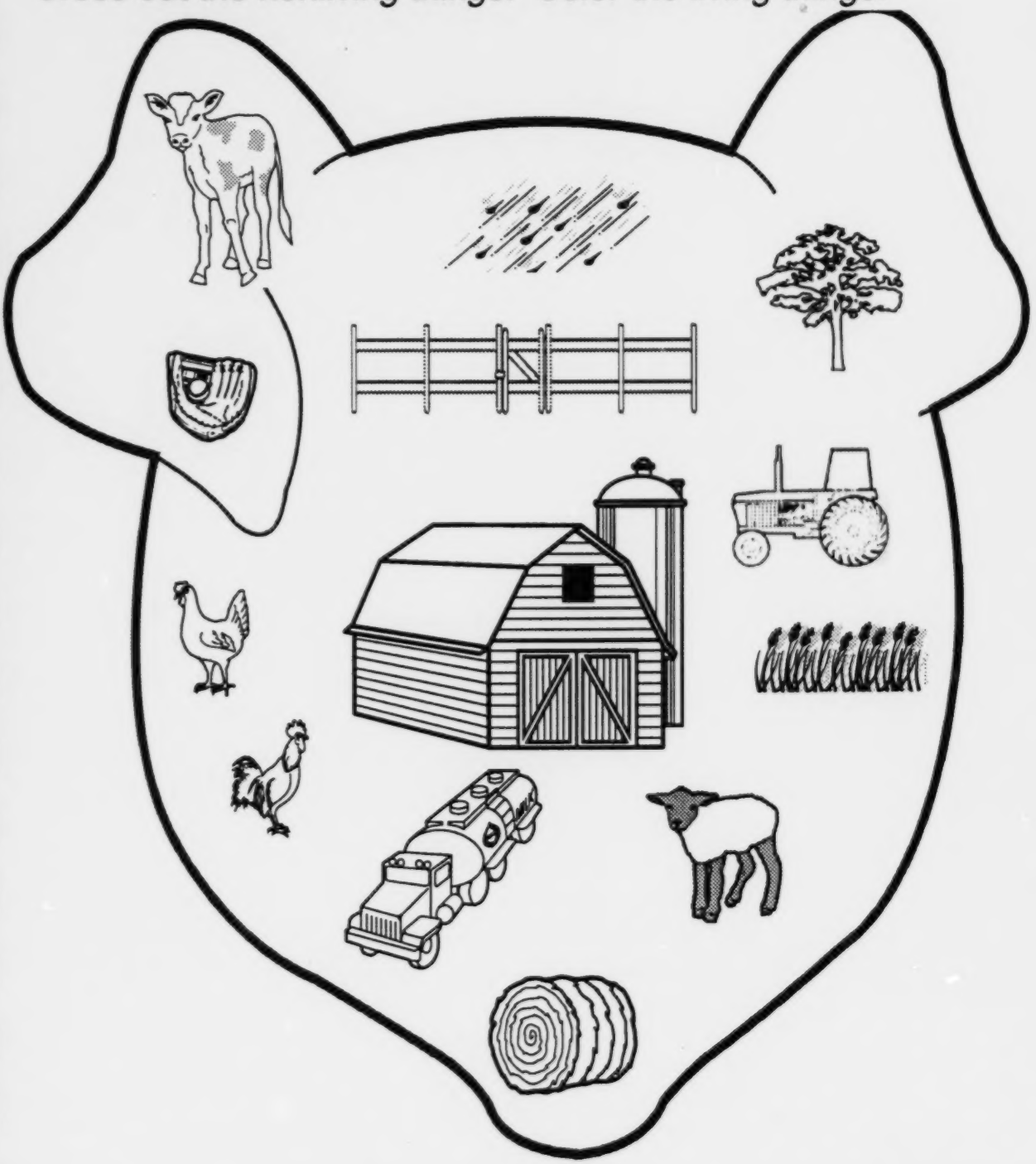
E. Related Activities

1. Set up two displays, one with living things and one with nonliving things. Have students contribute to the displays by bringing examples from home.
2. Have students create a bulletin board display of magazine pictures or student-made pictures of living and nonliving things.
3. Place a wide variety of items in a bag. Divide students into teams. Have them draw one thing out of the bag at a time and decide whether it is living or nonliving.

Name _____

Living or Non-living

Cross out the nonliving things. Color the living things.



Produced by Oklahoma State University Cooperative Extension Service,
in cooperation with the Oklahoma State Department of Agriculture, 1992.

IS IT JUST DIRT?

S 13

SUBJECT: Science

GRADE: 1

CONCEPT: IV

COMMODITY: Soils

LEARNER OUTCOME

Grade One: I. A. Students will, given objects, organisms or events, identify the properties by which they could be ordered.

LEARNER OBJECTIVE

The student will understand that soil has many different components and that these components determine what plants can grow in it.

LESSON (No student worksheet is needed for this lesson.)

A. Step-by-Step Instructions

1. Ask several students to scoop a half-cup of soil from where they live and bring it to school in plastic bags.
2. Place all the bags on a table, and compare the colors and textures of the soils, first just by looking at it in the plastic bags.
3. Now have students feel the soils, and compare the different textures. Wet a small amount of soil and have students work it between their fingers. They should feel for grittiness (sand), smoothness (silt) and slickness (clay).
4. Have students look at the soil through a microscope or magnifying glass.

B. Background

What do you think of when you think of soil? Do you just think of the dirt in your yard or the sand in your sandbox? Do you think all soils are the same? If so, you are in for a surprise.

Soil is the outer layer of the earth's surface. It is made up of minerals from rocks, organic materials (the remains of dead plants and animals), water and air. Soil is made of three different kinds of particles. We call them sand, silt and clay. Plants grow from the soil, and many animals live in the soil.

Source: OSU Cooperative Extension Service, Agronomy Dept.

C. Resources

Books

Poth, Cathy, *The Earth,* Silver-Burdett, 1989 (translated from the original French text by Pierre Averous).

Wilkes, Angela, *Growing Things,* EDC, 1984.

D. Evaluation

Could the students see and feel the difference in the soils brought from different students' homes? Could they identify other materials in the soil when examining it with a magnifying device?

E. Related Activities

1. Put handfuls of different kinds of soil in separate clear containers. Fill the containers with water, and shake until the water is cloudy. Set the containers aside, and compare them after an hour or two. The largest soil particles will sink first, and the fine particles will float to the top. The film on top is called humus. Good garden soil will have several different particle sizes.
2. Take cuttings from two or three easy-to-grow house plants, (philodendron, aloe vera, spider plant) and place them in water until they begin to grow roots.

Place cuttings from the same plant in different kinds of soil--one in good potting soil, one in sand and one in clay soil. Have students watch the progress of the different plants over a period of time and chart which plants do best in which kinds of soil.

3. Sing to the tune of "Three Blind Mice:"

I love dirt. I love dirt.
It can't hurt on my shirt.
I love to squirt it with my hose.
I love to squeeze it between my toes.
The fun we have just grows and grows.
Oh, I love dirt. I love dirt.

A CHANGE OF SEASON

S 14

SUBJECT: Science

GRADES: 1-2

CONCEPT: V

COMMODITY: Wheat

LEARNER OUTCOME

Grades One through Two: V. B. Students will, from collected data, complete or create an appropriate graph or chart.

LEARNER OBJECTIVE

The student will match the seasonal words to the ag-related scenes depicting the different stages of a wheat crop.

LESSON

A. Step-by-Step Instructions

1. Bring a loaf of bread to class, and begin the discussion by asking *"What is bread made from?"* If students guess flour, bring out a bowl of flour and ask *"What is flour made from?"*
2. Get pictures of wheat for students to look at from a seed company, farmer's COOP or encyclopedia.
3. Share background information. Pass out student worksheets. Instruct students to think about the background information as they match the appropriate season to the picture showing what happens in the wheat field during that time of year.

B. Background

Wheat is the number one crop grown in Oklahoma. Most of the wheat grown here is ***hard red winter wheat.*** *This is the kind of wheat that grows best in the weather we have in Oklahoma and in states like Kansas, Colorado and Texas.*

In the fall the farmer plants the wheat. He uses a tractor and a piece of special equipment called a "drill." The drill pushes, or drills, the seed wheat down into the soil about three inches. Soon it will sprout and grow.

During the winter months, the farmer may put cattle out on the wheat so they can eat the tops of the small plants. Winter wheat provides many nutrients and vitamins which the cattle need. The tops of the plants will grow back later. Rain, snow or sleet will water the tiny plants so they can stay alive during the winter.

In the spring the warm sun shines, and the plants really start to shoot upwards. The plant is working to produce a tall plant with a head that will contain new seeds. Cattle will no longer be allowed to eat the plants. Sunshine and rain help the little plants grow healthy.

Summer has arrived. The wheat is turning a yellow gold color. The plants have plump heads, full of wheat kernels. The farmer quickly gets his equipment ready to gather in, or harvest, the crop. Bad weather, like hailstorms or tornadoes, can completely destroy a crop. This is the busiest and most important time during harvest.

Source: OSU Cooperative Extension Service, Agronomy Dept.

C. Resources

Books

Frank, Josette (ed.), *Snow Toward Evening,* Dial, 1990.
Gibbons, Gail, *Farming,* Holiday House, 1988.
Hinshaw, Dorothy, *Wheat, the Golden Harvest,* Patent, Dodd, Mead & Co., 1987.
Johnson, Sylvia, *Wheat,* Lerner, 1990.
Miller, Jane, *Seasons on the Farm,* Prentice-Hall, 1986.
Santrey, Laurence, *Summer: Discovering the Seasons,* Troll Associates, 1983.

D. Evaluation

Correct answers for the student worksheet are as follows: 1. fall; 2. summer; 3. spring; 4. winter.

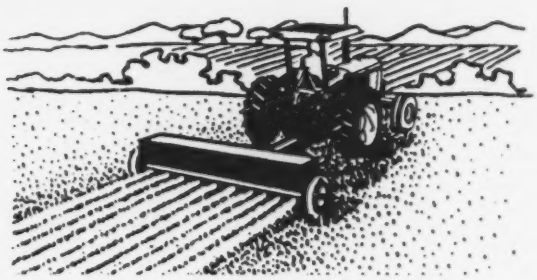
E. Related Activities

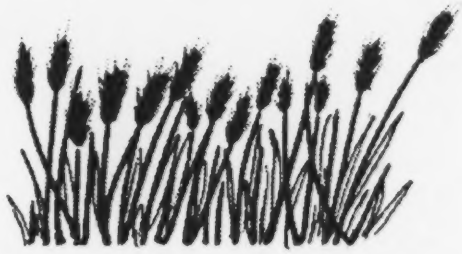
1. Obtain some seed wheat from a local farmer or farmer's COOP. Sprout an even number of seed on a moist paper towel. Fold the towel in two, placing the seeds inside the fold. Put the towel on a paper plate. Mist the paper towel daily to keep the seeds moist. Place in a sunny window, and watch the wheat grow!
2. Ask students to tell orally the different steps it takes to grow wheat.
3. Mark on class calendar and celebrate the first days of fall, winter, and spring.
4. Recite the months of the year. What months of the year do we associate with the four different seasons?

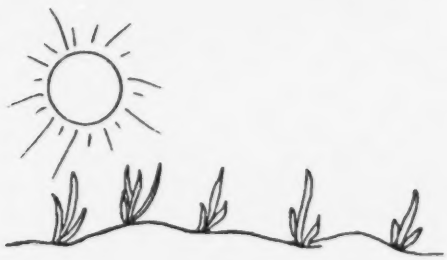
Name _____

A Change of Season

Draw a line from the picture to the seasonal word it represents. Color the pictures.







Fall

Summer

Winter

Spring

Produced by Oklahoma State University Cooperative Extension Service
in cooperation wtih the Oklahoma Department of Agriculture, 1992

Ag in the Classroom

CARROT BASKETS

S 15

SUBJECT: Science

GRADES: 1-2

CONCEPT: V

COMMODITY: Horticulture

LEARNER OUTCOME

Grades One through Two: VII. B. Students will practice safety procedures in all science activities.

LEARNER OBJECTIVE

Students will observe that not all plants need soil to grow.

LESSON (This lesson is best suited for small groups, under the supervision of an adult. No student worksheet is needed.)

A. Step-by-Step Instructions

1. Prepare ahead of time, but bring examples of the different stages of preparation to show your students. You will need untrimmed plump carrots, with the leaf stalks still attached. Cut off the carrots, and trim the leaves from the leaf stalks so that only the stalks and a one-inch cap remain on each one. Carve out the center sections of the carrot caps. This will be the water hole for the carrot.
2. Discuss safety rules with your students by showing what safety procedures you followed as you prepared the carrot caps ahead of time.
3. Each student will need one of the carrot caps, four toothpicks and four strings. Show the students how to place the toothpicks opposite one another in the sides of the carrot caps. Explain safety rules for using the toothpicks.
4. Have students tie one of the strings to each of the toothpicks to make a hanging basket. The strings should be tied at a central meeting point to make a stronger holder.
5. Hang all the baskets in a sunny window, and have students keep water in the hollowed-out carrot caps until new leaves appear.

B. Background

Carrots are a common garden-grown crop that grows well in Oklahoma. Carrots need loose, rich soil so that the tap root will grow straight down.

We usually think of plants as needing soil to grow, but there is a new way of growing vegetables without soil. This method is called hydroponics. In hydroponics, vegetables are grown in a nutrient-rich liquid instead of soil.

The government agency most involved in developing hydroponics is NASA. NASA is interested in this method because plants grown in liquid would be easier to take into space than those growing in soil. Maybe one day our future astronauts will be growing fruit and vegetable crops in space, using hydroponics.

Source: OSU Cooperative Extension Service, Horticulture Dept.

C. Resources

Books

Barden, Helen, *Busy Little Gardener,* Jelly Bean, 1990.
Ehlert, Lois, *Growing Vegetable Soup,* Harcourt, Brace, Jovanovich, 1988.
Gibson, R., *Kitchen Fun,* EDC, 1991.
Walker, Lois, *Get Growing!* John Wiley & Sons, 1990.

D. Evaluation
Were the students able to make the basket? Did they follow safety procedures while using the toothpicks? Did the students enjoy the activity?

E. Related Activities
Scrape the unused portion of the carrots, and cut them into strips for a snack.

COMMON KINDS OF INSECTS S 16

SUBJECT: Science **GRADES:** 1-2

CONCEPT: V **COMMODITY:** Entomology

LEARNER OUTCOME

Grades One through Two: II. D. Students will, given a set of objects, organisms or events, use observable properties to classify them.

LEARNER OBJECTIVE

The student will recognize and name three common insects found in Oklahoma.

LESSON

A. Step-by-Step Instructions

1. Share background information with students
2. Provide students with the "bug body" puzzle pages and have them cut the puzzles out.
3. Have students put the bug bodies back together and glue them onto construction paper. Have students label the bug bodies with black crayon or marker.

B. Background

There are over 1.5 million kinds of insects. They come in all shapes and sizes. Without them, our world would probably end. Insects carry pollen from flower to flower. This helps the plants make the fruits and vegetables we eat. Many bugs help farmers, either by pollinating the plants or by eating the bugs that harm the farmers' crops. These are called ***beneficial insects.***

The ***lady beetle****, more commonly known as a lady bug, is a beneficial insect. Lady beetles and their young (larva) are welcome in gardens, because they eat many harmful insects. The lady beetle you see in the garden may not be a lady. There are male and female lady beetles.*

Some insects will sting you. You should stay away from them. Don't kill them, though, because they might be beneficial too. Insects do not sting without cause. They only sting when they think you are going to hurt them. One of these insects, the ***honeybee*** *is a very beneficial insect. It carries pollen from plant to plant, then carries the pollen to the beehive. There the bees all work together to make wax and delicious honey. If you do get stung, try this home remedy: Mix a small amount of baking soda with water to make a paste. Make sure the bee's stinger has been scraped out, then rub the paste on the sting and let it dry.*

Each year people spend millions of dollars trying to control insects that are pests. One of the most common household pests is the ***cockroach****. Both the German cockroach and American cockroach reproduce rapidly and can be very difficult to control. Farmers have trouble with cockroaches, too. Cockroaches like to get into grains the farmer has stored and lay their eggs. In no time at all they will overrun the storage area.*

Source: OSU Cooperative Extension Service, Entomology Dept.

C. Resources

Books

Carle, Eric, *The Very Hungry Caterpillar*, Scholastic, 1987.
Carle, Eric, *The Very Quiet Cricket*, Putnam & Grassel, 1990.
Doney, Meryl, *Look What I've Found! A Cocoon*, Lion Books, 1991.
Heller, Ruth, *The Reason for a Flower*, Grosset & Dunlap, 1983.

Hobon, Brom, *Jason and the Bees*, Harper & Row, 1980.
Parker, Nancy Winslow, and Joan Richards Wright, *Bugs*, Mulberry, 1987.
Van Allsburg, Chris, *Two Bad Ants*, Houghton Mifflin, 1988.

Additional Resources

"Bud's World: A Plant's View," New York Ag in the Classroom, Cornell University, 111 Kennedy Hall, Ithaca, NY 14853 (35-page student booklet, 50 cents each).

4-H entomology project manuals, county Extension office.

"Insects," Right On Programs, 744 New York Ave., Huntington, NY 11743 (Apple or Commodore software disk for grades 4-6, $25, plus $4 for shipping and handling).

D. Evaluation

Were the students able to unscramble the insect bodies?

E. Related Activities

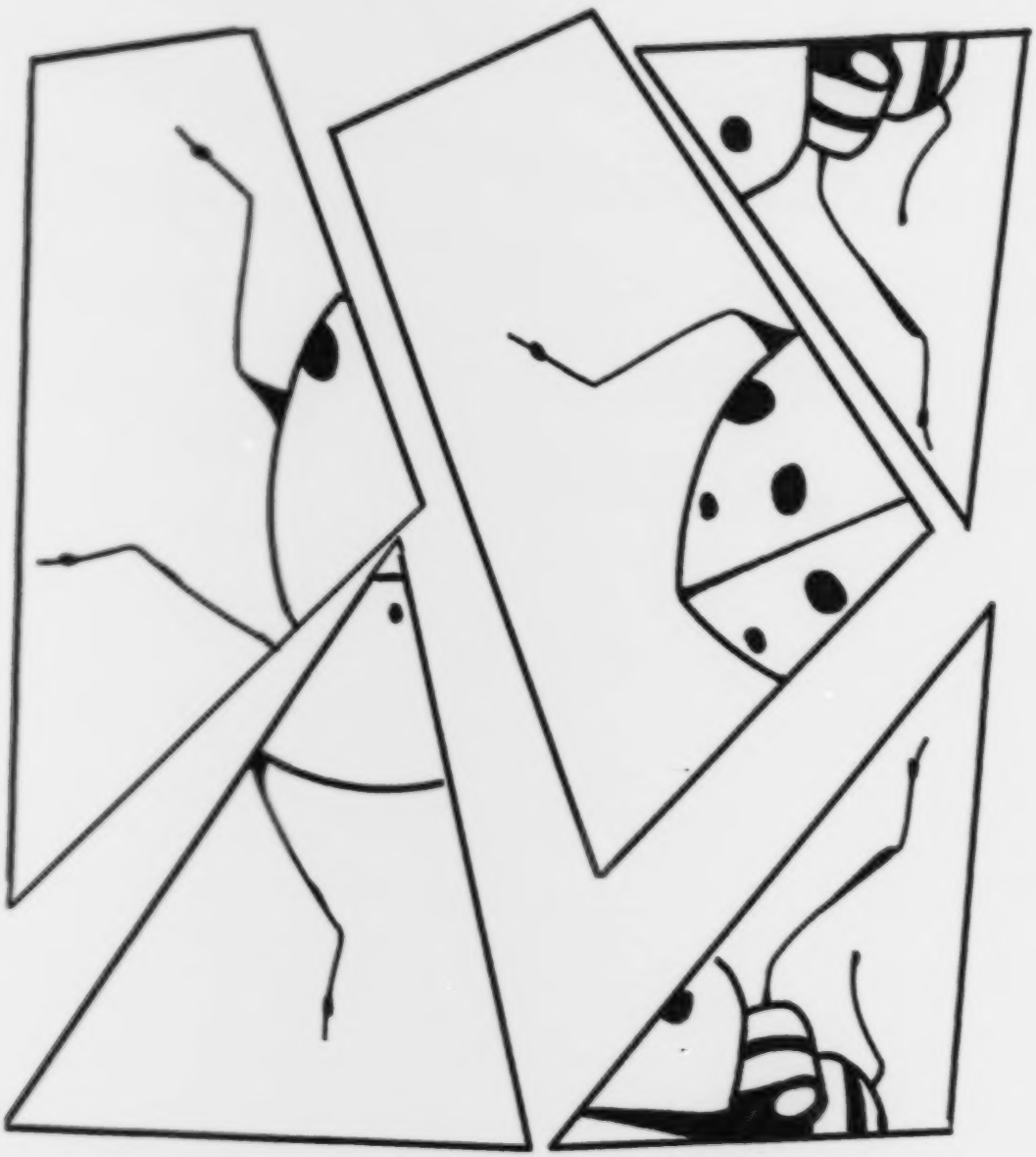
1. Have students collect live insects at home and bring them to school. Have students observe the insects' behavior for a few hours during the school day. Make sure students release the insects outside before they leave to go home.

2. Have students create and design their own insects, using common materials (paper cups, string, construction paper, etc.) Each insect must have three body parts (head, thorax and abdomen) and six legs.

Name _____

Common Kinds of Insects A

Cut out puzzle pieces. Put this lady beetle back together and glue it on another piece of paper.

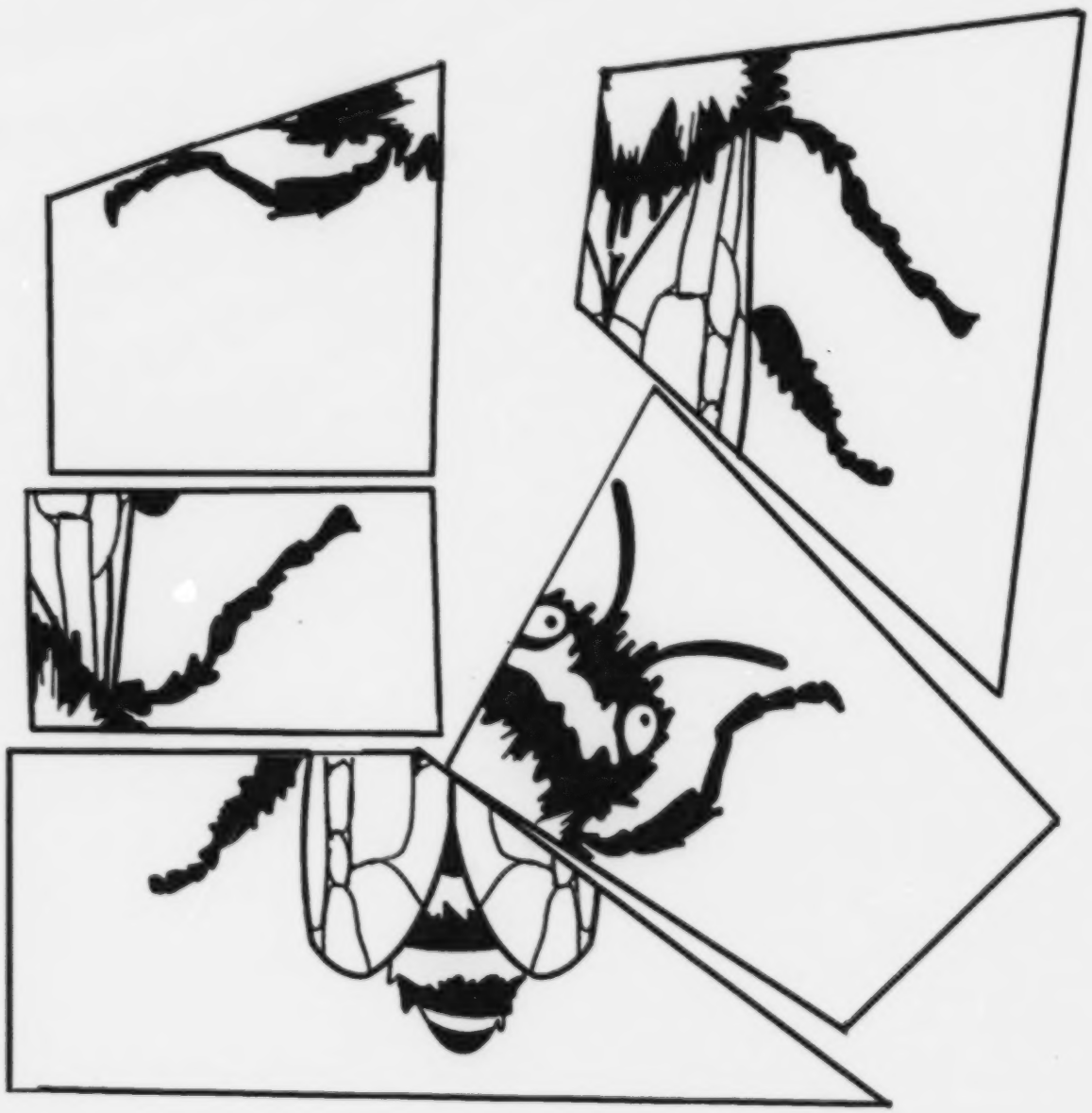


Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Common Kinds of Insects B

Cut out puzzle pieces. Put this honeybee back together and glue it on another piece of paper. Color.

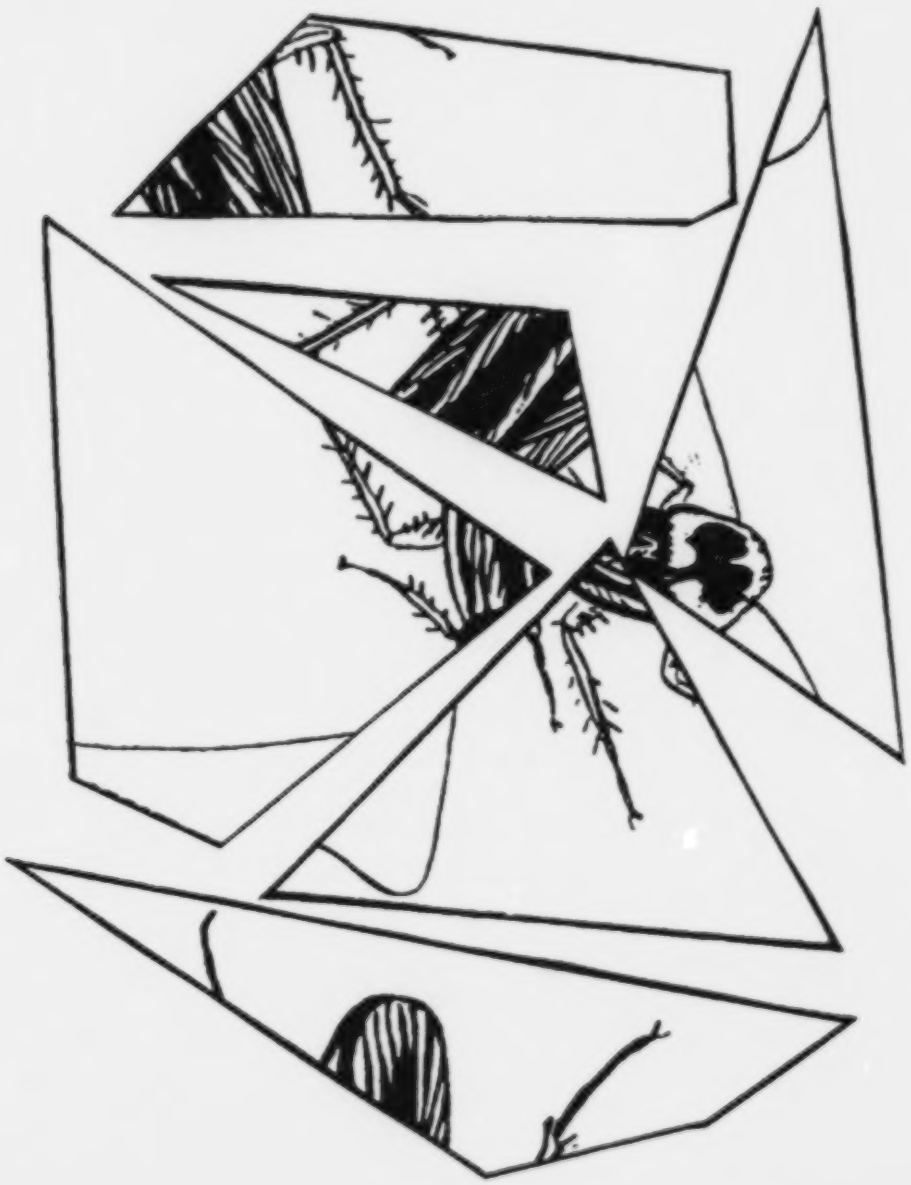


Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Common Kinds of Insects C

Cut out puzzle pieces. Put this cockroach back together and glue it on another piece of paper. Color.



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

DAIRY OR BEEF?

S 17

SUBJECT: Science

GRADES: 1-2

CONCEPT: II

COMMODITY: Dairy/Beef

LEARNER OUTCOME

Grades One through Two: I. A. Students will, given objects, organisms, or events, identify the characteristics that are similar or different.

LEARNER OBJECTIVE

The student will be introduced to the difference between dairy cows and beef cattle.

LESSON

A. Step-by-Step Instructions

1. Introduce the cattle-related vocabulary words listed in the background information.
2. Share the dairy cattle information with students. Pass out the dairy cattle student worksheet (A), and discuss the directions.
3. Share the beef cattle background with students. Pass out beef cattle student worksheets (B), and discuss the directions.
4. After students have completed both pages, compare the body shapes of the different cattle and discuss the roles each kind of cattle play on Oklahoma farms.

B. Background

Vocabulary

herd - A number of large animals assembled together.
beef - The flesh of a cow, steer, heifer or bull.
cow - The mature female of any bovine animal.
calf - The young of the cow of the bovine family.
steer - Any male cattle raised for beef.
heifer - A young cow, especially one that has not yet given birth to a calf.
bull - The male of any bovine species.
cattle - live animals held as property or raised for some use, usually mature bovine animals, such as cows, bulls and steers

Dairy Cattle

Farmers in Oklahoma and throughout the United States raise cattle for their milk. Cows, the mothers, each produce one offspring, or calf, each year. Every now and then the mother may have twins, but that doesn't happen very often.

It takes 283 days for a calf to be born. Calves are born throughout the year. The dairy farmer plans it that way, because cows give more milk right after a calf is born. That way the farmer can make sure there is always plenty of milk.

After the calves are born the farmer moves them into a special place, where they are bottle-fed a special diet. Some calves stay on the dairy and go back into the herd. Others are sold. Some may go to feed lots, where they will eventually be butchered, like beef cattle.

Dairy cows produce milk that is used to make ice cream, cheese, sour cream, butter and many other dairy products.

The breeds of dairy cattle are Holstein, brown Swiss, Guernsey, Jersey, milking shorthorn and Ayrshire.

Beef Cattle

Agriculture people in Oklahoma and many other Plains states raise beef cattle for their high quality red meat. Like dairy cows, a beef cow will produce one offspring, or calf, each year. It takes 283 days for a beef calf to be born.

Calves can be born year-round, but most beef calves are born in the spring or fall.

A calf will drink milk from its mother's udder for the first seven to ten months. Then the calf is separated from the cow and fed grain, hay and other supplements.

Once the steer or heifer reaches a certain weight, the beef producer may send it to a feed lot to gain more weight. Sometimes the beef producer will butcher the animal and sell it for meat.

Some breeds of beef cattle are Angus, Charolais, Hereford and Limousin.

Source: OSU Cooperative Extension Service, Animal Science Dept.

C. Resources

Books

Carrick, Donald, *Milk,* Greenwillow, 1985.
Gibbons, Gail, *The Milk Makers,* Macmillan, 1985.
Gregory, O.B., and Elsie Wrigley, *Milk,* Rourke, 1981.
Kaizuki, Kiyonari, *A Calf is Born,* Orchard, 1990.
Showers, Paul, *What Happens to a Hamburger?* Harper Trophy, 1985.

Additional Resources

Associated Milk Producers, Inc., 1700 N. Sooner Rd., Oklahoma City, OK 73111.
"Beef From the Farm to You," Oklahoma Beef Industry Council, 5101 N. Classen, Ste. 210, Oklahoma City, OK 73118, (405) 840-3777 (coloring book).
California Milk Advisory Board, Communications Services, P.O. Box 4680, Modesto, CA 95352 (free dairy lesson plans and poster for grades K-3).
"Happiness is a Beef Cow," Shirley A. Domeier, Rt. 2, Box 77, New Ulm, MN 56073, (24-page coloring book, 50 cents each, minimum order of 20).
"Healthy Choices: Balanced Meals," Associated Milk Producers, Inc., 6240 E. 15, Tulsa, OK 74112 (free nutrition unit for grade 2).

D. Evaluation

Do the students have a basic idea about the difference between dairy cattle and beef cattle? Did they color the cattle pictures as directed on the student worksheets?

E. Related Activities

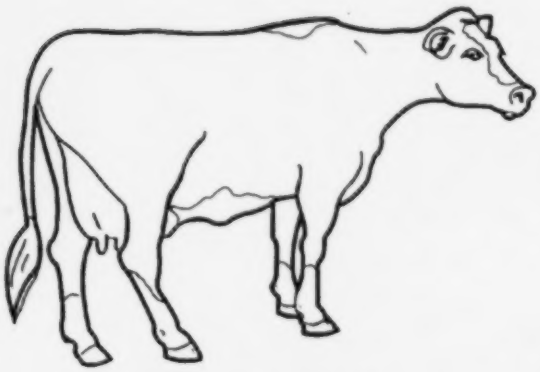
1. Visit dairy and beef operations. Ask the owners to lead brief tours of the operations and describe the daily routines.
2. Second grade students may look up the cattle terms and define them.
3. Bring products made from beef and dairy cattle to class.

Name _____

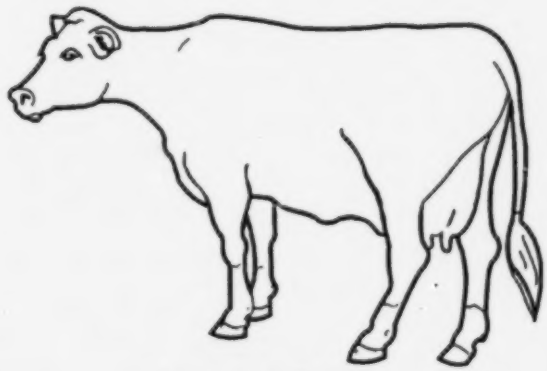
Dairy or Beef? A

Color the different breeds of dairy cattle.

Dairy Cattle

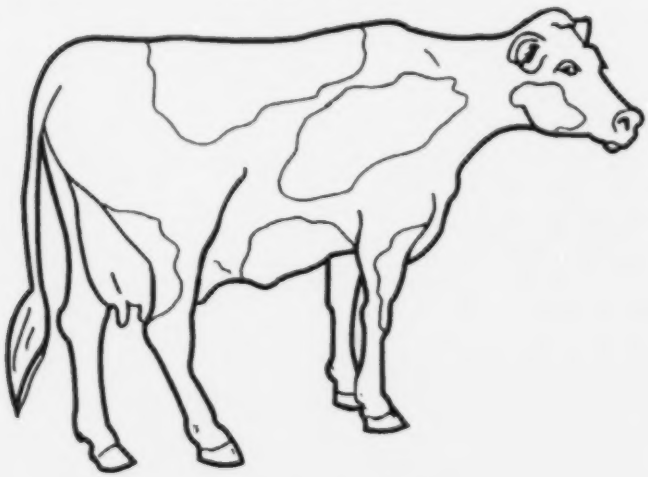


Guernsey Cow
orange body, white markings and white tail



Jersey Cow
tan body, brown feet and white tip of tail

Holstein Cows are some of the top producers of milk. A Holstein cow is black and white.



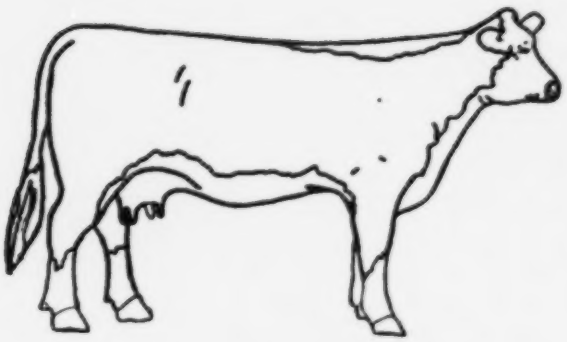
Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

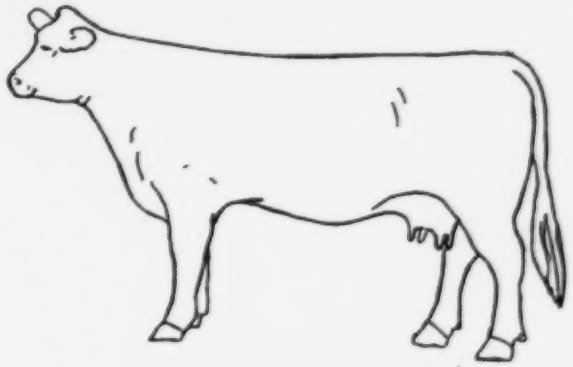
Dairy or Beef? B

Color the different breeds of beef cattle.

Beef Cattle

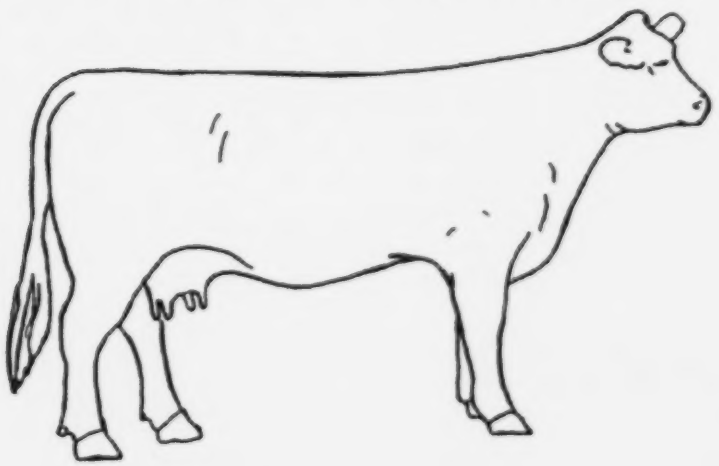


Hereford Cow
red body, white markings on face, feet and chest



Limousin Cow
golden red body

Angus cattle came to our country from Scotland. They have no horns. Angus are a dark black or deep red color.



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

HOME, SWEET NEST

S 18

SUBJECT: Science

GRADES: 1-2

CONCEPT: V

COMMODITY: Poultry

LEARNER OUTCOME

Grades One through Two: V. A. Students will describe the properties of an object or event in sufficient detail so another person can identify it.

LEARNER OBJECTIVE

The student will understand a nest is a home for many farm animals.

LESSON (No student worksheet is needed for this lesson.)

A. Step-by-Step Instructions

1. Ask students to discuss how they feel when they are in their homes (safe, warm comfortable). Guide the discussion so that students associate a nest with a home.
2. Help students brainstorm several different types of animals that build nests (chickens, birds, turtles, etc.).
3. Have students collect items (twigs, yarn, etc.) that a bird might use to build a nest. The students could collect the materials on a class nature walk or bring them from home.
4. On a heavy piece of cardboard, arrange the twigs and other materials in a bowl shape. Glue down the nest. Have students draw baby chicks to place in the nest.

B. Background

A nest is home to many animals. Redbirds, alligators, ducks and chickens all build nests especially designed for their environments and body shapes.

A chicken will work for days to build just the right nest before laying its eggs. A nest will provide warmth and cushion for the eggs until it is time for them to hatch. This will take 21 days.

After the eggs hatch the nest will provide protection for the young. In the wild, the nest is camouflaged so that predators cannot spot it.

Source: OSU Cooperative Extension Service, Animal Science Dept.

C. Resources

Books

Heine, Helme, *The Most Wonderful Egg in the World*, Aladdin, 1983.
Heller, Ruth, *Chickens Aren't the Only Ones*, Grosset & Dunlap, 1981.
Polacco, Patricia, *Just Plain Fancy*, A Bantam Little Rooster Book, 1990.
Watts, Barrie, *Chicken and Egg*, Silver-Burdett, 1987.

Additional Resources

"Teaching Scientific Things . . . Like Eggs," Barbara Bannister, 1925 SE Taggart, Portland OR 97202-2252 (a book of simple activities to teach the science of eggs, $17).

D. Evaluation

Did the student enjoy building the nest out of natural materials. Do students understand a nest is home to many animals?

E. Related Activities

1. Have students bring in abandoned nests. Set up a display in the classroom. Have students try to identify all the different types of materials that make up the nest.

2. Contact the Oklahoma Wildlife Department (1801 N. Lincoln Blvd., Oklahoma City, OK 73152) or your county Extension agent for fact sheets and directions for making birdhouses best suited for your school area. (Milk cartons are no longer recommended, due to overheating of eggs in the nest.)

HOW SEEDS ARE SCATTERED S 19

SUBJECT: Science

GRADES: 1-2

CONCEPT: V

COMMODITY: Horticulture

LEARNER OUTCOME

Grades One through Two: I. A. Students will, given organisms or events, identify the characteristics that are similar or different.

LEARNER OBJECTIVE

The student will identify different seeds, classify them and suggest their methods of travel.

LESSON

A. Step-by-Step Instructions

1. Have students bring several different kinds of seeds to class or take a walk outside for a seed-collecting expedition.
2. Have students work together and group their seeds in different ways (by size, color, shape, texture, hardness). The seeds will be easier to handle in small paper cups
3. Have students choose five of each kind of seed to make a classroom chart of every kind of seed brought to class. Discuss how each kind of seed is scattered to a new place.
5. Have students list all the ways seeds are scattered (animals' fur, clothes, water, wind, insects).

B. Background

Seeds travel. Some seeds travel to far away places, and some stay close to the plant or tree where it grew. Some seeds, like dandelion and poppy seeds, are carried by the wind. Some, like lily pods, move through the water. Birds eat berries and carry the seeds far away. Some seeds stick to the fur of animals and are carried to new places. People also move seeds. We collect seeds so we can plant them the following spring.

Source: OSU Cooperative Extension Service

C. Resources

Books

Barden, Helen, *Busy Little Gardener,* Jelly Bean, 1990.
Bourgoing, Pascale, *Fruit,* First Discovery Book, Scholastic, 1989.
Demi, *The Empty Pot,* Trumpet, 1990.
Ehlert, Lois, *Eating the Alphabet: Fruits and Vegetables From A to Z,* Harcourt, Brace, Jovanovich 1990.

Additional Resources

"Wee Sprout Package: Growing Sprouts in Water," A Green America, P.O. Box 1028, Pagosa Springs, CO 81147, (303) 264-2286 (special package for educator, including growing jar, 16-page story book and sprout mixture, $2 per kit, 40 cents for seed refills, minimum order of one dozen).

D. Evaluation

Did the students collect seeds and identify them? Did they enjoy making a collection and speculating on the seeds' method of travel?

E. Related Activities

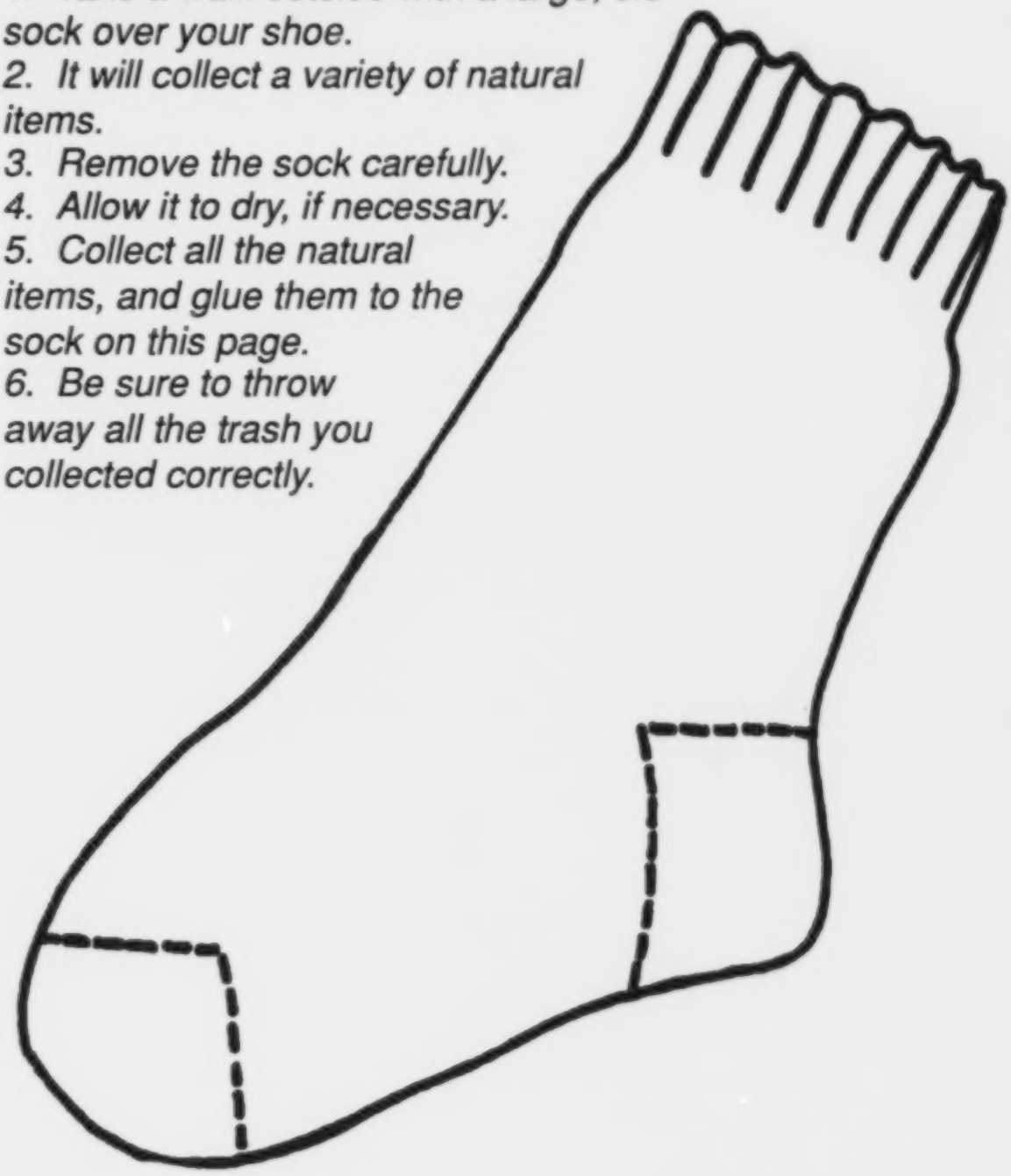
1. Let students make their own seed collections on index cards or poster board.
2. Let students use extra seeds from the lesson to make art pictures.

Name _____

How Seeds Are Scattered

Sock Walk

1. Take a walk outside with a large, old sock over your shoe.
2. It will collect a variety of natural items.
3. Remove the sock carefully.
4. Allow it to dry, if necessary.
5. Collect all the natural items, and glue them to the sock on this page.
6. Be sure to throw away all the trash you collected correctly.



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

MADE FROM ANIMALS

S 20

SUBJECT: Science

GRADES: 1-2

CONCEPT: V

COMMODITY: Farm Animals

LEARNER OUTCOME

Grades One through Two: II. D. Students will, given a set of objects, organisms or events, use observable properties to classify them.

LEARNER OBJECTIVE

The student will learn to match animals with the products they produce.

LESSON

A. Step-by-Step Instructions

1. Hand out student worksheets and discuss the animals and then the products pictured below them.
2. Instruct students to mentally match each animal's picture to the product it produces.
3. Color pictures. Cut out pictures of products and glue them next to the pictures of the appropriate animals.

B. Background

Each animal on your student worksheet produces something we use. You know that we get hamburgers and steak from ***beef cattle****, but did you know that there are also many uses for the cow's hide? Leather from the cow's hide is used to make shoes, belts and baseball gloves. The cow's bones and horns are used to make buttons, piano keys and violin strings. Gelatin used to make marshmallows, ice cream and other desserts also comes from the cow's bones and horns. Even chewing gum is made from a part of the cow's stomach.*

The bristly hair of a ***pig*** *makes a great hair brush. From the pig's hide we get a soft leather good for making gloves and some shoes. The heart valves from pigs are used for transplanting into the hearts of humans with heart trouble, and the skin of hogs is sometimes used to replace the skin of people who have been badly burned.*

Most mattresses and pillows these days are stuffed with foam made from petroleum products, but some people think the best pillows are still made from ***goose*** *feathers. Goose down is used to make comforters and coats that are about the warmest you can get.*

Rabbit *furs make nice collars, earmuffs and even jackets and coats. Some of the nicest men's hats are made from rabbit fur.*

Wool is one of the two main products we get from ***sheep****. Wool is made from the sheep's fleece. The fleece is like the sheep's hair. Sheep farmers shear, or cut, the sheep's fleece once a year, just like you get a haircut. The fleece is then spun into wool yarn and woven or knitted into sweaters, caps, coats and blankets.*

C. Resources

Books

Brown, Margaret Wise, *Baby Animals*, Random House, 1989.
Brown, Margaret Wise, *Big Red Barn*, Random House, 1989.
Curran, Eileen, *Hello, Farm Animals*, Troll, 1985.
Emberley, Ed, *Ed Emberley's Little Drawing Book of Farms*, Little, Brown, 1980.
Jacobsen, Karen, *Farm Animals*, A True New Book Series, Children's Press, 1981.
Kitchen, Bert, *Pig in a Barrow*, Dial Books for Young Readers, 1991.

Yoshi, *1,2,3*, Picture Book Studio, 1991.

Additional Resources

"Whatever Happened to Old MacDonald's Farm," Oregon Women for Agriculture, 3472 Howe-Prairie Rd, Silverton, OR 97381 (16-page activity coloring book, 25 cents per copy).

D. Evaluation

Students should have matched the animals and products as follows: lamb - wool sweater; pig - hairbrush (bristles); chicken - egg; beef cow - baseball mitt; goose - down feather pillow; rabbit - rabbit fur earmuffs.

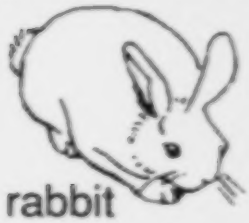
E. Related Activities

1. Have students wear wool to school on a designated day.
2. Make a display of animal products students bring from home.
3. Make a bulletin board, using the farm animals as the center. Place pictures or drawings of animal products around the board. Using yarn, attach the product to the animal that produces it.

Name _____

Made from Animals

Color the pictures. Cut out the animal products. Glue each product next to the animal from which it was made.



rabbit

lamb

pig

chicken

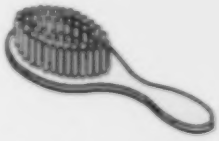
beef cattle

goose

wool sweater

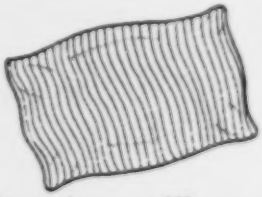
egg

baseball mitt



hairbrush

earmuffs



feather pillow

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

PLANT PARTS WE EAT S 21

SUBJECT: Science GRADES: 1-2

CONCEPT: V COMMODITY: Horticulture

LEARNER OUTCOME

Grades One through Two: II. D. Students will, given a set of objects, organisms, or events, use observable properties to classify them.

LEARNER OBJECTIVE

Students will be introduced to an assortment of vegetables and will learn to locate the parts humans use for food.

LESSON

A. Step-by-Step Instructions

Worksheet A

1. Read the worksheet with your class, and discuss the different plant parts. Help students identify the plant parts we eat. Ask if anyone in the class has eaten any of the different plant parts.
2. Discuss the colors of the plant parts we eat. Have the students color the pictures on their worksheets.

Worksheet B

1. Have students match the plants to the edible parts eat by drawing a line from the plant to the word. Use worksheet A as a guide.

Worksheet C

1. Have students match the food words in the word boxes to the correct food shapes. Direct students to color the food shapes but not to color over the words.

B. Background

*Which parts of the plant do we usually eat? The seed? The fruit? You may be surprised to learn that there are several parts of different plants that we eat. When you eat asparagus, you are eating the **stem** of the plant. When you eat spinach or lettuce you are eating the plant's **leaves**.*

*When you eat squash or cucumbers or tomatoes, you are eating the fruit of the plant. When you eat corn, you are eating the **seed**. When you eat radishes or carrots, you are eating the root.*

When you eat broccoli or cauliflower, you are eating the flowers of those plants. They don't look like flowers, do they? Some of the flowers that look like flowers are edible, too, though. Some people use nasturtium flowers in salads. The flowers and leaves have a spicy, peppery taste.

Source: OSU Cooperative Extension Service, Horticulture Department

C. Resources

Books

Brown, Elizabeth B., *Vegetables,* Prentice Hall, 1981.

Ehlert, Lois, *Eating the Alphabet: Fruits and Vegetables: From A to Z,* Harcourt, Brace, Jovanovich, 1990.

Ehlert, Lois, *Growing Vegetable Soup,* Harcourt, Brace, Jovanovich, 1988.

Modesitt, Jeanne, *Vegetable Soup,* Macmillan, 1988.

Stone Soup and Other Stories, New Way Learning with Literature, Violet Level, Steck-Vaughn, 1987.

Additional Resources

"The Great Green Bean", Yarnhill County Women for Agriculture, P.O. Box 101, Dayton, OR 97114 (videotape, $12.08).

D. Evaluation

Answer key provided for student worksheets.

E. Related Activities

1. Have a tasting party with a sampling of the plant parts from the student worksheet. Have students identify which part of the plant the food comes from.
2. Write the cafeteria menu on the board. Look at the vegetable of the day, and have students say whether it is a seed, flower, stem, etc.

Name _____

Plant Parts We Eat

A

Color the vegetables. Make them look good enough to eat.

You eat our roots.

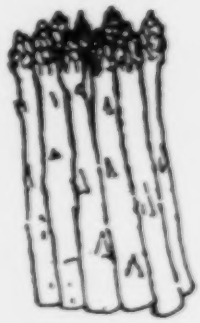
beets

carrots

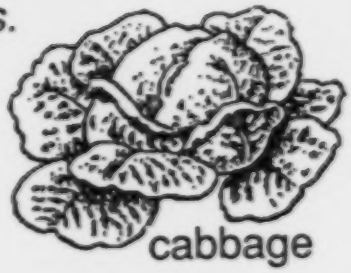
radishes

You eat my stems.

asparagus



You eat our leaves.



cabbage

lettuce

spinach

You eat our seeds.

corn

beans

peas

You eat our flowers.

broccoli, cauliflower

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Plant Parts We Eat B

Match the plants to the parts we eat.

roots

stems

leaves

seeds

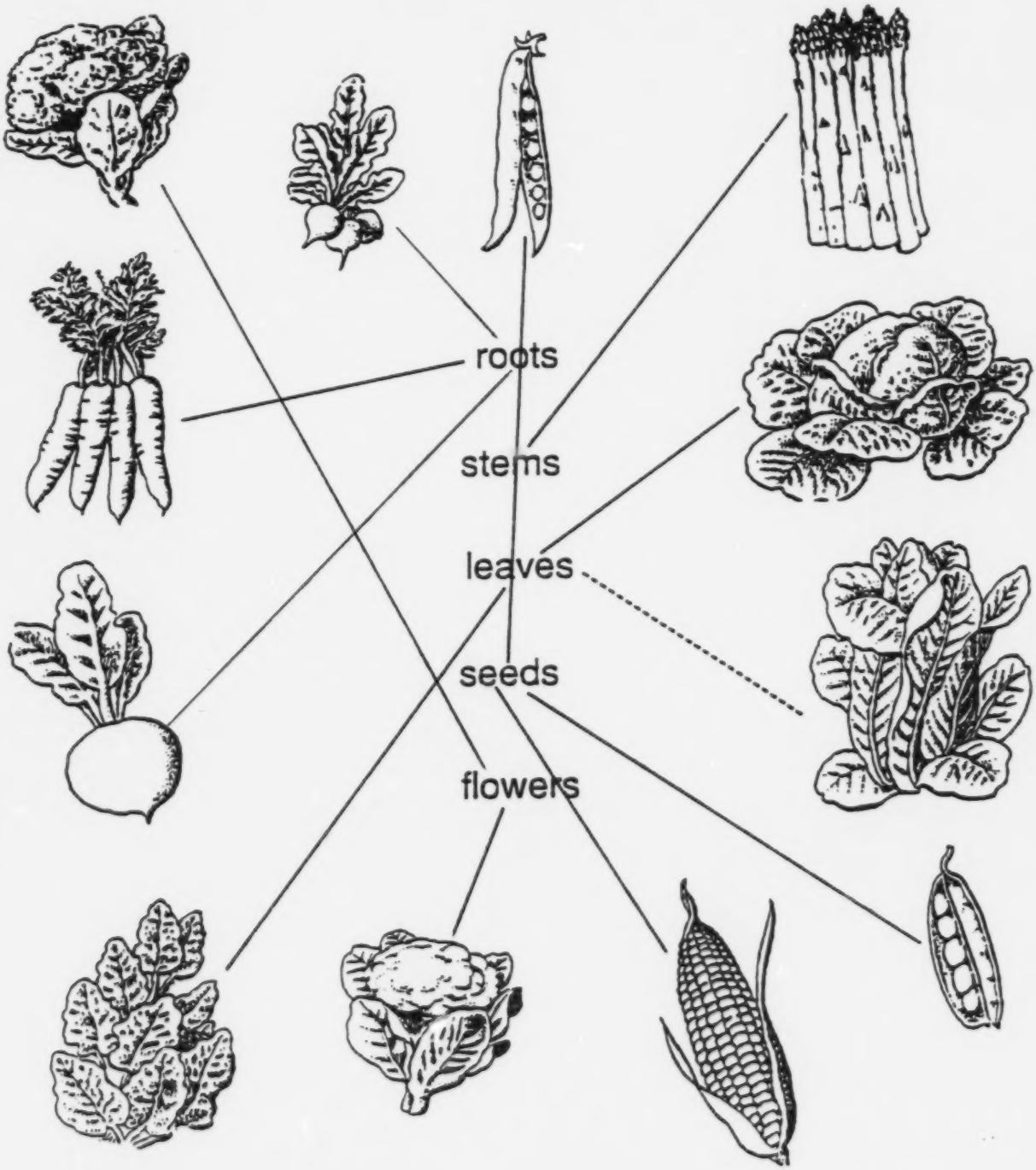
flowers

Produced by Oklahoma State University Cooperative Extension Service
in cooperation wtih the Oklahoma Department of Agriculture, 1992

Name _____

Plant Parts We Eat (answer page)B

Match the plants to the parts we eat.

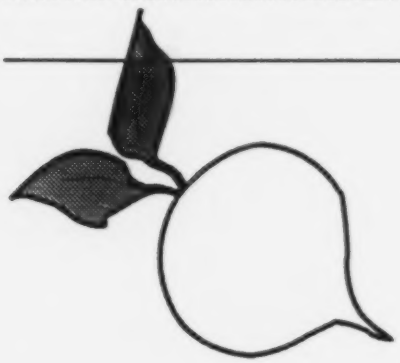


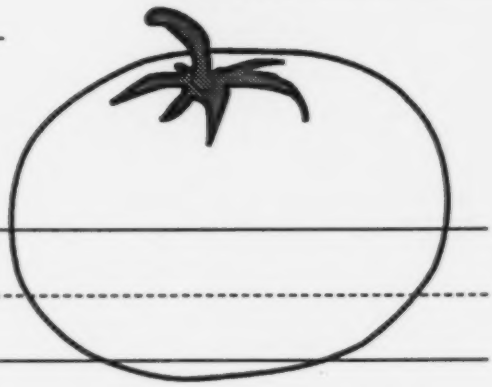
Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

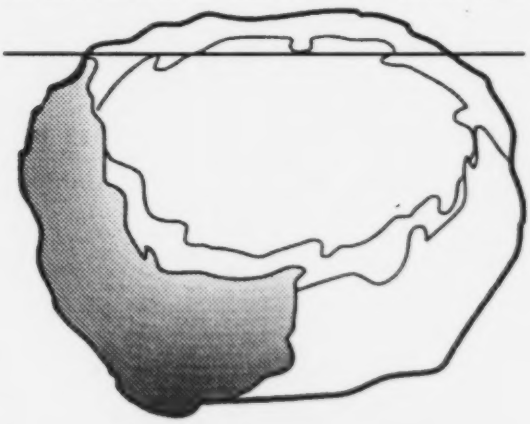
Name _____

Plant Parts We Eat C

Salad vegetables. Write the name of the vegetable on the line. Color around the words.







Word Box

carrot onion
tomato radish
lettuce

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

TOMATO PLANT PARTS

S 22

SUBJECT: Science

GRADES: 1-2

CONCEPT: I

COMMODITY: Horticulture

LEARNER OUTCOME:

Grades One through Two: II. B. Students will, given a set of objects, organisms or events, select a serial order for each property.

LEARNER OBJECTIVE

Students will understand what things are essential for growing a tomato plant.

LESSON

A. Step-by-Step Instructions

1. Discuss the concepts of living and nonliving things. Point out three examples of living things in the classroom and then three examples of nonliving things.
2. Direct the discussion to plants as living things and share the background information.
3. Plant 25 tomato seeds in paper cups or milk cartons. Have students water seeds, and wait until the plants grow above the soil. Pull up one plant every day and observe the growth.

B. Background

There are four things that any plant must have to live: rain (water); sun (light); soil; and air. The sun warms the plant and helps it produce its green coloring. This green coloring makes food for the flowers, stems and leaves. If the plant did not get sunlight, it would be a sickly yellow color and might die.

The air helps keep the plant from getting too hot and carries the carbon dioxide that plants take in and use. Carbon dioxide is a gas put out by animals and humans when we breathe out. Carbon dioxide helps the plant breathe and grow.

What happens when you play out in the sunshine? You probably get hot and thirsty. That is exactly what happens to a plant. It is the plant's job to grow all day in the sunshine. That makes the plant hot and thirsty. So a plant needs a drink of water just like our bodies do when we work and play hard.

What helps hold the plant in place? The roots do most of the work. The soil holds tightly to the plants roots to keep it from leaning or falling over. Soil also provides nutrients for the plant. The nutrients are the plant's food. In soil you can find all types of nutrients that plants need to help them grow strong.

C. Resources

Books

Barden, Helen, *Busy Little Gardener,* Jelly Bean, 1990.

Ehlert, Lois, *Eating the Alphabet: Fruits and Vegetables from A to Z,* Harcourt, Brace, Jovanovich, 1990.

Ehlert, Lois, *Growing Vegetable Soup,* Harcourt, Brace, Jovanovich, 1988.

Herriot, James, *Blossom Comes Home,* St. Martin's, 1988.

Sanchez, Isidro, and Carme Peris, *Garden,* Barron's, 1991.

Watts, Barrie, *Tomato* Stopwatch Books, Silver-Burdett Press, 1988.

Additional Resources

Growlab: A Complete Guide to Gardening in the Classroom, National Gardening Association, 180 Flynn Ave., Burlington, VT 05401 (128-page softbound teacher's book, with reproducibles, $14.95, plus $3 shipping).

D. Evaluation

Do the students understand the concepts of "living" and "nonliving?" Can your students identify things a tomato plant needs to grow? Were the students able to identify the parts of a tomato plant?

E. Related Activities

Put tomato seeds in clear glasses stuffed with wet paper towels. Keep them wet until the seeds sprout. Students will be able to observe the roots and shoots as they grow in the glass.

Name _____

Tomato Plant Parts

Write the correct word from the word box below under each picture.

Word Box
seeds
roots
flowers
sprout
leaves
fruit

Produced by Oklahoma State University Cooperative Extension Service
in cooperation wtih the Oklahoma Department of Agriculture, 1992

WET AND WOOLY

S 23

SUBJECT: Science

GRADES: 1-2

CONCEPT: IV

COMMODITY: Wool

LEARNER OUTCOME

Grades One through Two: I. A. Students will, given objects, organisms or events, identify the characteristics that are similar or different.

LEARNER OBJECTIVE

The student will become familiar with wool and some characteristics of wool.

LESSON (No student worksheet is needed for this lesson.)

A. Step-by-Step Instructions

1. Bring gloves made from wool and gloves made from manmade fiber (acrylic or polyester) to class. Have each student put a wool glove on one hand and a nonwool glove on the other hand.
2. Sprinkle two tablespoons of water over the palm of each glove.
3. Have students rub their hands together and wait five minutes.
4. After five minutes, ask students which hand feels warmer? Which one feels cooler?
5. Students should take off both gloves and place them on separate napkins or paper towels. The wet side of the glove should be down, against the paper.
6. After a few seconds, ask students to determine which glove still has more water on the surface. The wool glove should have more, since wool will not lose as much water as manmade fiber.

B. Background

It is difficult to tell if a piece of clothing is made from wool simply by looking at it or feeling it. Manmade fibers, such as nylon and acrylic, can feel and look like wool. The best way to tell is by reading the label.

Wool does have some characteristics that nylon and acrylic do not have. When wool is stretched, it springs back into shape. Manmade fibers feel like string and go flat when stretched out. Wool smells like fur. When wet it smells similar to a wet dog. However, when wool is wet, it feels warmer than manmade fiber does. Wool can get quite damp without feeling uncomfortable to your skin. It's a good thing to wear if you're afraid you might get caught out in the cold, because it won't freeze when it gets wet, like other fabrics will.

Wool is a special natural fiber. It always feels warm and soft. It is very good at keeping out the cold and at warming your skin.

Source: OSU Cooperative Extension Service, 4-H Curriculum

C. Resources

Books

Amery, H., *The Naughty Sheep,* EDC, 1989.
Demi, *Fleecy Lamb,* Putnam, 1987.
Dixon, Annabelle, *Wool,* Threads Series, Garrett Educational Corp., 1990.
Lewis, Kim, *Emma's Lamb,* MacMillan, 1991.
Shaw, Nancy, *Sheep in a Jeep,* Houghton-Mifflin, 1986.
Shaw, Nancy, *Sheep in a Shop,* Houghton-Mifflin, 1991.

D. Evaluation
Did the student, with adult supervision, conduct the experiment and reach a conclusion? Did the student enjoy the activity?

E. Related Activities
1. Designate a "Wool Day." Ask students to wear wool to class. Bring items made from wool to class, and set up a display.
2. Bring several items of clothing. Have students determine if they are made from wool or a manmade fiber.
3. Conduct the ***Ice Cube Test***. Give each student two tightly-sealed plastic bags, each containing two or three ice cubes. Have each student put a wool glove on one hand and a nonwool glove on the other hand and hold one ice bag in each hand. *Which cubes melted first? Which hand felt cold first? Which glove would you want to be wearing if you were playing in the snow?*

WHO'S WHO?

S 24

SUBJECT: Science

GRADES: 1-2

CONCEPT: I

COMMODITY: Farm animals

LEARNER OUTCOME

Grades One through Two. II. E. The student will place an object, organism or event into a classification system.

LEARNER OBJECTIVE

Students will be able to match the pictures of mother, father and baby animals with their names.

LESSON

A. Step-by-Step Instructions

1. Brainstorm with students all the names or nicknames for "Father" ("Daddy," "Papa," "Dad"), "Mother" ("Mommy," "Mom") and "Children" ("Kids," "Youngsters").
2. Explain to the students that there are also specific names for mother, father and baby farm animals.
3. Share or summarize information from background material.
4. Pass out student worksheets and explain directions.

B. Background

Sheep - A mother sheep is called a "ewe." She usually has one or two baby "lambs." Lambs are very playful. They love to run and jump in the barnyard. The father sheep is called a "ram."

Geese - A goose is a territorial animal. It doesn't like other animals coming into its living area. The first warning from a goose is a hiss. If that doesn't work, the goose will flap its wings, extend its long neck forward and run toward the intruder. A female goose is simply called a "goose." The male is called a "gander." The mother goose will lay many eggs. The baby geese that hatch from these eggs are called "goslings."

Swine - A mother pig is called a "sow." The sow can have a litter of 8-12 baby "pigs." They are much smaller than their parents but will grow fast while drinking the sow's milk. Often baby pigs are called "piglets." However, the technical term is "pig." The father pig is called a "boar." The boar may weigh several hundred pounds.

Chickens - Mother "hens" lay eggs, usually one or two a day. After the baby "chick" hatches from the egg, it does not spend much time with its parents. The father, or male chicken, is called a "rooster." The roosters are the chickens that crow. Most people who raise chickens have few roosters. Roosters will fight each other if there are too many of them in the chicken yard.

Source: *A Glossary of Farm Terms*, U. S. Department of Ariculture

C. Resources

Books

Adams, Pam (illus.), *Old MacDonald Had a Farm*, Child's Play, 1991.
Brown, Margaret Wise, *Baby Animals*, Random House, 1989.
Cousins, Lucy, *Farm Animals*, Tambourine, 1991.
Curran, Eileen, Hello, *Farm Animals*, Troll, 1985.
Dunn, Judy, *The Little Lamb*, Random House, 1977.
Eastman, P.D., *Are You My Mother?* Random House, 1960.
Filipek, Nina, *I Love Animals*, World International, 1986.

Isenbart, H., *Baby Animals on the Farm*, Putnam, 1981.
Kindersley, Dorling, *Farm Animals*, Aladdin, 1991.

D. Evaluation

Students should group the animals as follows: ram-ewe-lamb; boar-sow-pig; bull-cow-calf; gander-goose-gosling; rooster-hen-chick.

E. Related Activities

1. Expand lesson to include other animal names, for example: hippopotamus-calf; cat-kitten; kangaroo-joey, or -stallion; mare-foal.
2. Have students name as many farm animals as they can. List them on the board. Then have them try to fill in a graph, naming father, mother and offspring for each animal. Encourage them to find more animals to add to the graph.

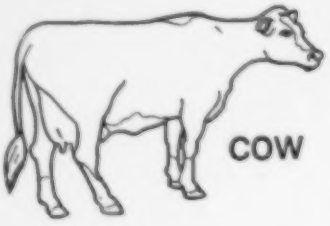
Name _____

Who's Who?

Draw lines to match the fathers, babies and mothers.

ram

lamb


cow

gander

calf

hen

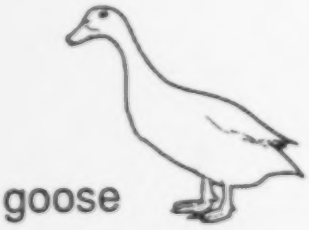
boar

chick

sow

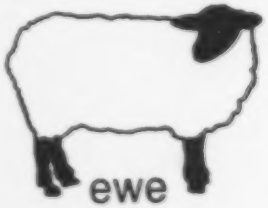
rooster

pigs


goose

bull

goslings


ewe

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

BABY PEANUT PLANTS

S 25

SUBJECT: Science

GRADE: 2

CONCEPT: I

COMMODITY: Peanut

LEARNER OUTCOME

Grade Two: I. B. 4. The student will identify plant and animal structures and describe the function of each.

LEARNER OBJECTIVE

The student will investigate the physical structure of a peanut plant.

LESSON

A. Step-by-Step Instructions

1. Bring raw (not roasted) peanuts to class. Have students take the peanuts out of the shells and split them in half. Show students the bump at one end of the opened peanut. This is the baby plant, or the embryo.
2. Shell several raw peanuts and spread them on paper towels in a pan. Wet the paper towels and cover the pan with plastic wrap.
3. In a few days roots and stems will sprout from the peanuts. Explain that the plant can get along without soil for awhile because of the food stored in the seed. *As the water soaks into the seed the food is dissolved. It is broken into tiny bits that become part of the sap. The sap flows into the new roots and stems, bringing them everything they need until the seed runs out of food.*

B. Background

Peanuts are not really nuts. Nuts grow on trees. Peanuts grow underground. The peanut is the fruit of the plant. It is unusual for the fruit of a plant to grow underground. Especially when the flowers grow above the ground.

The peanut seed grows into a small green bush about 18 inches tall. It has delicate yellow flowers. After the flower loses its petals, the flower stalk, or peg, is pulled by gravity toward the ground. The peg grows into the ground and forms peanuts about one inch below the soil surface. It takes about four to five months for the peanut plant to grow from planting to harvest.

Source: OSU Cooperative Extension Service, Horticulture Dept.

C. Resources

Books

Hajdusiewicz, Babs Bell, *Please Do Feed The Animals*, Steppingstone Series, Steck-Vaughn, 1991.
Sanchez, Isidro, and Carme Peris, *Garden*, Barron's, 1991.
Walker, Lois, *Get Growing*, John Wiley & Sons, 1990.
Wyler, Rose, *Science Fun with Peanuts and Popcorn*, Julian Messner, 1986.

Additional Resources

National Peanut Council, 1500 King Street Suite 301, Alexandria, VA 22314 (703) 838-9500.
Oklahoma Peanut Commission, Box D, Madill, OK 73446.

D. Evaluation

Correct answers for the student worksheet are as follows: 1. leaf; 2. flower; 3. peg; 4. peanut; and 5. root.

E. Related Activities

1. Make *caramel peanuts* - Drop peanuts into slightly warm caramelized sugar and spoon onto waxed paper. Allow to cool thoroughly before tasting.
2. Place three peanut seedlings in paper cups filled with soil. Snip both leaves off the first seedling. Snip just one off the second seedling. Leave both leaves on the third seedling. Water the plants and label them. Keep the plants in a warm place for a week. Can a plant grow without its seed leaves?

Name _____

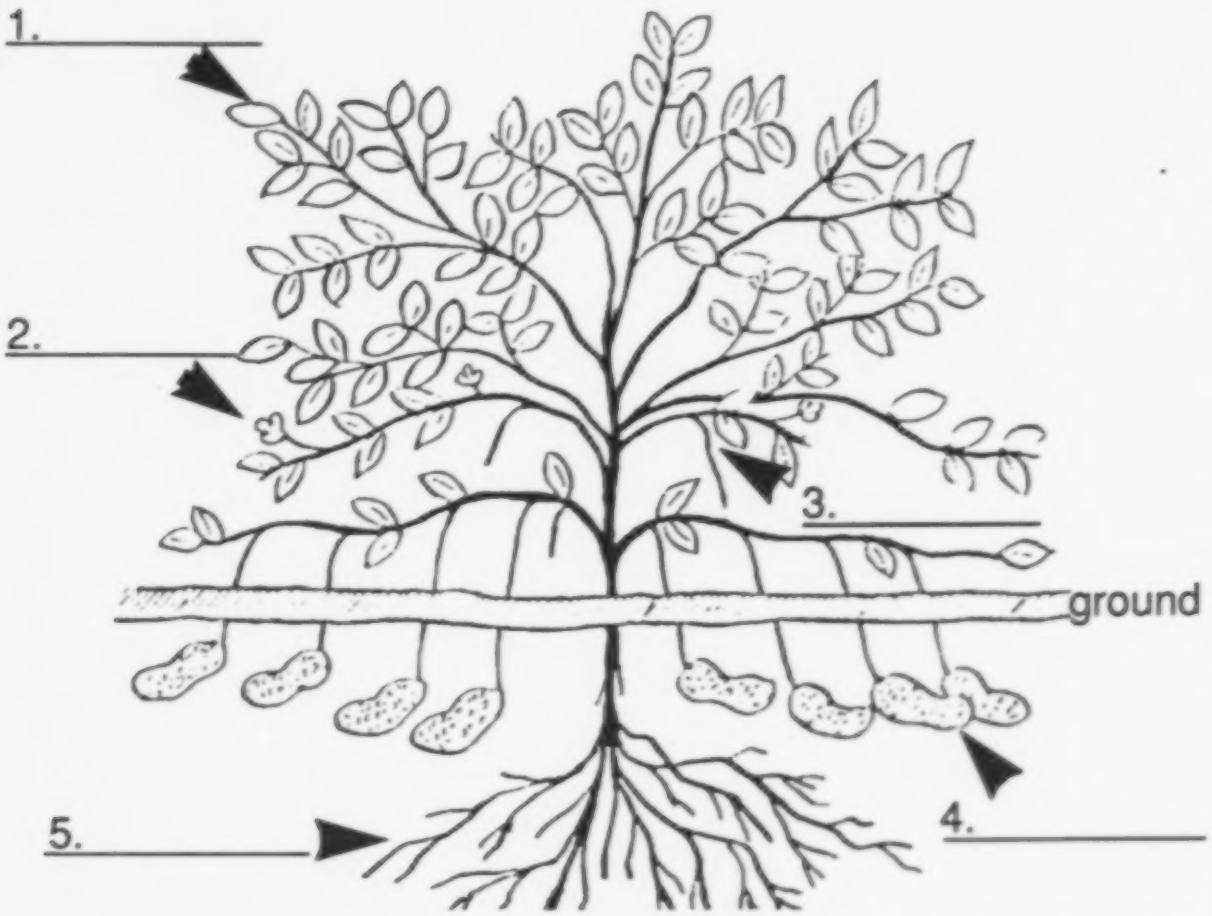
Baby Peanut Plants

This is a picture of a peanut plant. It shows the five important parts of the plant—the ***leaf,*** *the* ***flower*** *, the* ***peg,*** *the* ***fruit*** *and the* ***root.***

The peg is long and thin. It looks like a rope growing into the ground or reaching for the ground. As the end of the peg grows into the ground and gets bigger, it grows into a peanut. The peanut is the plant's fruit.

Write these words on the lines where they belong.

flower root fruit peg leaf



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

BEEF IS GOOD FOR YOU

S 26

SUBJECT: Science

GRADE: 2

CONCEPT: I

COMMODITY: Beef

LEARNER OUTCOME

Grade Two: V. B. Students will, from collected data, complete or create an appropriate graph or chart.

LEARNER OBJECTIVE

Students will learn that beef builds strong bodies, because it contains vitamins and minerals to help them grow.

LESSON

A. Step-by-Step Instructions

1. Discuss what it takes to help students grow strong and healthy. Talk about healthy eating habits.
2. Share background information with students.
3. Introduce and discuss the vocabulary words that go with the word search puzzle--*"beef," "roast," "vitamins," "steak," "cow," "grow."*
4. Have students look at and discuss the vocabulary words *iron, vitamin B-1, protein, thiamin* and *niacin* from the color sheets. Then have them complete the color sheets and the word search puzzles.

B. Background

We eat beef in many different ways. What is your favorite way to eat beef? On pizza? In a hamburger? Or do you like steak? Beef is good to eat. It has large amounts of essential nutrients, like iron, Vitamin B-1 and protein.

Source: Oklahoma Beef Industry Council

C. Resources

Books

Grossman, Bill, *Donna O'Neeshuck Was Chased by Some Cows,* Harper Trophy, 1988.

Showers, Paul, *What Happens to a Hamburger?* Harper Trophy, 1985.

Additional Resources

"Beef from the Farm to You," Oklahoma Beef Industry Council, 5101 N. Classen, Ste. 210, Oklahoma City, OK 73118 (coloring book).

"Heart Healthy Diet," Oklahoma Beef Industry Council, 5101 N. Classen, Ste. 210, NE 28, Oklahoma City, OK 73105 (brochure).

"Myths and Facts about Beef," Oklahoma Cattlemen Association, 2500 Exchange, Oklahoma City, OK 73108, (405)235-4391.

"What's to Eat," USDA Yearbook, 1979.

D. Evaluation

Do students understand that beef provides certain essential vitamins? Did they complete the color pages and the word search? An answer key is featured on the back side of the teacher page for the word search.

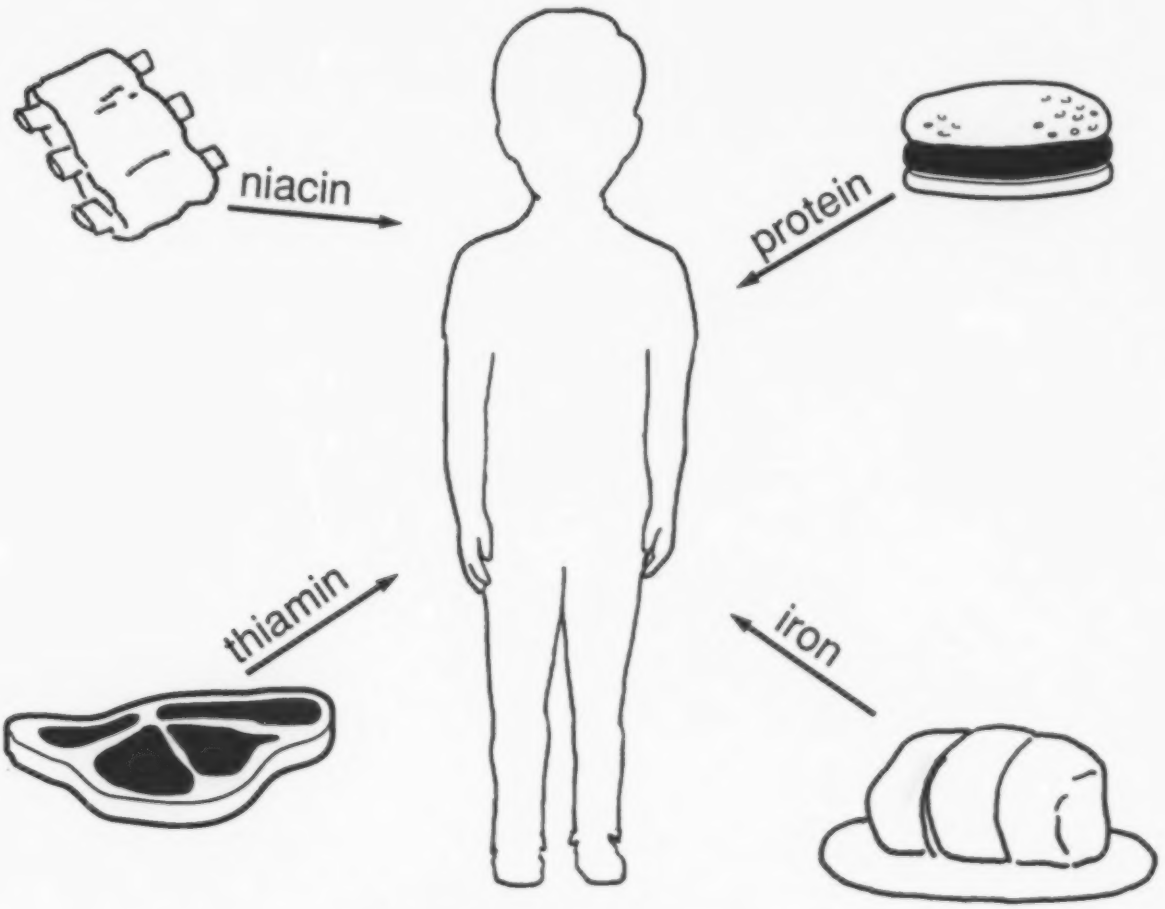
E. Related Activities

1. Have students keep a food diary for three days to keep track of how much beef they eat and where they get it.
2. Design a chart listing all students in the class. Measure and weigh each student every month to see how each one has grown. Record findings each month.

Name _____

Beef is Good For You A

Add the face and clothes to this body.



Beef helps you grow.

Fill in these facts about you.		
height	weight	favorite beef

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Beef is Good for You B

Write the name of the month at the top of one column. Fill in the rest of the information in the boxes underneath. Do it again in another month and again at the end of the year. Compare. Have you grown?

Month			
Height			
Weight			
Favorite Dairy Food			
Favorite Meat/ Protein			
Favorite Fruit/ Vegetable			
Favorite Bread/ Cereal			

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Beef is Good for You C

Find these words and circle them:

beef	vitamins	cow
roast	steak	grow

g r o w b l a p

s n i m a t i v

t t z a i r o r

g r o w b l a p

s n i m a t i v

t t z a i r o r

b e e f o t n a

u r m a s c e d

l b s z k s s t

y t c c o w r o

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Ag in the Classroom

Name _____

Beef is Good for You (answer key) C

Find these words and circle them:

beef	vitamins	cow
roast	steak	grow

g r o w b l a p

s n i m a t i v

t t z a i r o r

g r o w b l a p

s n i m a t i v

t t z a i r o r

b e e f o t n a

u r m a s c e d

l b s z k s s t

y t c c o w r o

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

DO ANIMALS POLLUTE. . . ? S 27

SUBJECT: Science GRADE: 2

CONCEPT: IV COMMODITY: Beef

LEARNER OUTCOME:
Grade Two: I. C. Students will, given conditions before, during, and after an event, identify qualitative and quantitative changes.

LEARNER OBJECTIVE
Students will consider the impact of agriculture on our environment. Students will learn what can be done to help control pollution.

LESSON (No student worksheet is needed for this lesson.)

A. Step-by-Step Instructions

1. Bring dried cow manure to class, or have your students bring it in a *non-plastic or non-glass* container.
2. Read the background information to your students.
3. Take the class outdoors, and have students grind the manure into the soil. Explain that the manure acts as fertilizer to enrich the soil but that too much fertilizer will cause plants in the soil to burn.
4. Write the vocabulary words, "manure," "waste," "pollute," "range," and "soil" on the chalkboard, and have students use the vocabulary words to write, in complete sentences, what happened to the cow manure.

B. Background

In early statehood days, settlers who couldn't find enough firewood would collect dried manure from the prairie and burn it in their fireplaces. The manure came from buffalo, horses and the settlers' cattle. The settlers would store the manure in a dry outhouse, where it would keep well for many months. It would create a very intense heat when burned but would release no odor in the house.

Today, more than half of all cattle manure, like that from wildlife, is dropped on millions of acres of pasture, open range and forest land. Since the manure is spread over such a large area, it usually does not pose a pollution problem.

But sometimes the animals will stand in the water to keep cool. If they do that, and large amounts of manure drop to the water, the manure can pollute the water in that area. To solve this problem some ranchers fence their ponds and streams so animals cannot stand in the water. Water from the ponds and streams is piped to watering tanks. Then when the animals get thirsty, they can drink from the watering tanks.

The manure from beef cattle kept in feedlots is another matter. Feedlot workers must collect the manure that builds up in the cattle pens to keep it from running off into the area water sources. Local farmers purchase the manure for a small fee and spread it on their farm land. This practice saves the farmer money and helps the feedlot operators protect the environment.

Source: OSU Cooperative Extension Service, Animal Science Dept.

C. Resources

Books

Santrey, Laurence, *Conservation and Pollution*, Troll Associates, 1985.
Stephen, R.J., *Farm Machinery*, Franklin Watts, 1986.

Additional Resources

"Agri-Balance: Not a Drop to Drink?" The Fertilizer Institute, 501 2nd St., NE, Washington, D. C. 20002 (VHS videotape about agriculture's impact on groundwater, free loan).

"Twelve Myths and Facts about Beef Production," National Cattlemen's Association, 5420 S. Quebec St., Englewood, CO 80155 (videotape for grades 1-3 and 4-6, $15).

D. Evaluation

Did your students enjoy the activity? Were they able to write the sentences telling what happened to the cow manure?

E. Related Activities

1. Have the class produce one group-written paragraph containing some of the complete sentences written by individual students in Step 4 of the lesson.
2. Mix a small amount of manure with soil in one pot and too much manure (half manure, half soil) in another pot. Plant some type of quick-growing bean in the pots. Water and label them. Watch the growth of the two plants for several weeks. Keep records. Discuss the outcome.

FOOD GROUPS

S 28

SUBJECT: Science

GRADE: 2

CONCEPT: V

COMMODITY: Foods

LEARNER OUTCOME

Grade Two: I. A. Students will, given objects, organisms or events, identify the characteristics that are similar or different.

LEARNER OBJECTIVE

The student will learn to identify food items and place them in the appropriate food groups.

LESSON

A. Step-by-Step Instructions

1. Review and discuss food groups, using background material.
2. Hand out student worksheets. Identify the pictures on each food line. Instruct students to draw an "X" over the food that does not belong in the same food group with the other two foods pictured.
3. After students have completed the worksheets, go back and discuss what food group was represented on each line. Have students say which picture they marked out on each line and why. Discuss the origins of each of the foods pictured (milk/dairy cow, roast/beef cow, cereal/corn, rice, wheat, oats, etc.)

B. Background

You need to eat three well-balanced meals every day to make sure your body is growing healthy and strong. A well-balanced meal contains something from each of these food groups:

Dairy
Meat
Breads/Grains
Fruits/Vegetables

Snack foods like potato chips and cookies have large amounts of fat or sugar and don't do anything to help your body grow strong. It's fine to eat these kinds of food, though, as long as you only eat small amounts at a time and don't make them the main part of your diet.

Source: OSU Cooperative Extension Service, Home Economics - Food Nutrition

C. Resources

Books

Bond, Shirley, and Janet Cook, *Where Food Comes From*, EDC, 1989.
Brown, Elizabeth B., *Vegetables*, Prentice-Hall, 1981.
Carle, Eric, *The Very Hungry Caterpillar*, Scholastic, 1969.
Day, Jenifer W., *What is a Fruit?* Golden/Western, 1976.
Ehlert, Lois, *Growing Vegetable Soup*, Harcourt, Brace, Jovanovich, 1988.

Additional Resources

"The Great Green Bean," Yarnhill County Women for Agriculture, P.O. Box 101, Dayton, OR 97114 (videotape, $12.08).
"What's to Eat?" U.S. Department of Agriculture Yearbook, 1979.

D. Evaluation

Correct answers to the student worksheet are as follows:

Line 1 - The roast should be marked out (dairy group).
Line 2 - The ice cream bar should be marked out (breads and grains group).
Line 3 - The broccoli should be marked out (meat group).
Line 4 - The hamburger should be marked out (dairy group).
Line 5 - The cottage cheese should be marked out (fruits and vegetables group).

E. Related Activities

1. Have groups of students make up menus to submit to the school cafeteria staff as possible menus to serve students.
2. Have students cut out pictures of foods from the different food groups and paste them on paper plates. Display them on the board or in the hallway.
3. Using student worksheet B, have students draw their favorite foods from each group and color the illustrations. Then have them share their choices with the class.

Name _____

Food Groups A

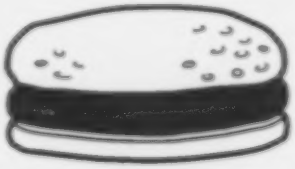
Put an "X" on the one that does not belong on each line.

1.

2.

3.

4.



5.

On each line, color the two that are in the same food group.

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Food Groups B

Draw your favorite food in each group. Color.

Dairy Group

Meat Group

Bread and Cereal Group

Fruit and Vegetable Group

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

HEALTHY DECISIONS

S 29

SUBJECT: Science

GRADES: 2

CONCEPT: I

COMMODITY: Foods

LEARNER OUTCOME

Grade Two: II. E. Students will place an object, organism or event into a classification system.

LEARNER OBJECTIVE

Students will relate good health to the food they eat.

LESSON (No student worksheet is needed for this lesson.)

A. Step-by-Step Instructions

1. Share background materials with students.
2. Have students draw pictures of several different foods or cut them from magazines. Each student should draw or gather enough "food" for his or her meal of choice or gather enough for all three meals and a snack.
3. Give students paper plates on which to construct their meals. Make sure each meal follows the 5-6-3-2 plan outlined in the background material.

B. Background

The 5-6-3-2 eating plan is a simple plan to follow to make sure you are getting proper nutrition. The U. S. Department of Agriculture recommends every person have the following foods every day:

*five servings of fruits and vegetables;
*six servings of breads and cereals;
*three servings of milk; and
*two servings of meat and protein.

Here are some common foods, divided into food groups.

Milk

whole milk	skim milk	Cheddar cheese
milkshake	pudding	ice cream
buttermilk	ice cream	mozzarella cheese
yogurt	frozen yogurt	dry milk

Fruit & Vegetable

apples	bananas	blueberries
cantaloupe	dates	grapefruit juice
grapes	orange juice	oranges
peaches	pears	pineapple
plums	raisins	rhubarb
strawberries	tangerines	watermelon
broccoli	cabbage	carrots
celery	corn	green beans
lettuce	mushrooms	onions
potatoes	pumpkin	sauerkraut
spinach	tomato juice	sweet potatoes
zucchini		

Meat & Protein

beef	pork	lamb
veal	fish	chicken
turkey	hot dogs	ham
dry beans	tuna	peanut butter
ground beef	shrimp	sausage
dry peas	eggs	nuts

Bread & Cereal

biscuits	cornbread	muffins
pancakes	raisin bread	rolls
rye bread	waffles	crackers
corn grits	macaroni	hamburger bun
noodles	oatmeal	cereal
rice	spaghetti	

Other Foods

butter	cake	candy
cookies	potato chips	margarine
mayonnaise	jam & jelly	pickles
syrup	corn chips	honey

Source: National FFA

C. Resources

Books

Carle, Eric, *The Very Hungry Caterpillar,* Scholastic, 1969.
Ehlert, Lois, *Growing Vegetable Soup,* Harcourt, Brace, Jovanovich, 1988.
Heller, Ruth, *Chickens Aren't the Only Ones,* Grosset & Dunlop, 1981.
Kellogg, Steven, *Johnny Appleseed,* Morrow Junior Books, 1988.
Sabin, Louis, *Plants, Seeds and Flowers,* Troll, 1985.

Additional Resources

"Food for America," National FFA Supply Service, 5632 Mt. Vernon Memorial Highway, Alexandria, VA 22309.

D. Evaluation

Students should be able to explain why they chose the foods they did for their plates and name the number of servings from each food group they should have each day.

E. Related Activities

1. Read *The Very Hungry Caterpillar* to your class. Discuss the foods featured in the story.
2. Design a bulletin board, with separate columns for each of the food groups. Have students bring food labels, packages or magazine pictures from home and tack them in the correct columns.
3. Older students can keep a food diary and record all the food they eat in one day.
4. Give the following spelling words to older students:

dairy	vegetable	bread
protein	fruit	cereal
	meat	

Name _____

Healthy Decisions

Write down all the foods you eat in a day. Don't forget the drinks. You may need to use another sheet of paper.

Breakfast	Lunch	Dinner	Snacks

Now sort these foods into food groups. Some foods will count more than once. For example, a hamburger has meat, bread and sometimes vegetables.

Fruits and Vegetables	Milk	Breads and Cereals	Meat	Other Foods

Count the number of servings in each group. Did you meet the 5-6-3-2 plan?

Produced by Oklahoma State University Cooperative Extension Service in cooperation with the Oklahoma Department of Agriculture, 1992

PIZZA PARTS

S 30

SUBJECT: Science

GRADE: 2

CONCEPT: V

COMMODITY: Foods

LEARNER OUTCOME

Grades One through Two: IV. A. Students will collect and report data, using an appropriate method.

LEARNER OBJECTIVE

Students will be able to list the ingredients of the pizza dough and to name pizza toppings.

LESSON

A. Step-by-Step Instructions

1. Ask students to bring the ingredients for making pizza in class.
2. Discuss where the different ingredients come from as you put the pizza together (see background materials). Cook the pizza.
3. Do simple fractions as you pass out the pizza. Eat the pizza.

B. Background

All the things that go into making pizza are called "ingredients." When you buy pizza in the store, the ingredients are listed on the package. Flour would be first on the list, because there is more flour in pizza than anything else. The next ingredient on the list would be water, then yeast, then salt. The ingredients are listed according to how much of that ingredient is in the package. The ingredient with the most goes first, and the ingredient with the least goes last.

Dough Ingredient	Source	Natural Resource
Flour	Wheat	Plant
Water	H20	Rain
Yeast	Meal or Cake	Fungi
Salt	Sodium Chloride	Mineral

Topping	Source	Natural Resource
Cheese	Milk	Dairy Cow
Sauce	Tomato	Plant
Pepperoni	Beef	Beef Cow
Sausage	Pork	Pig
Mushroom	Thallophytic Plant	Fungi

C. Resources

Books

Gibson, R., *Kitchen Fun,* EDC Publishing, 1991.
Kovalski, Maryann, *Pizza for Breakfast,* Morrow, Jr., 1990.
Tyler, J. and S. Stitt, *Mealtime Words,* EDC Publishing, 1989.

Additional Resources

New York Ag in the Classroom, Cornell University, 111 Kenneth Hall, Ithaca, NY 14853 (pizza poster, $2.50).

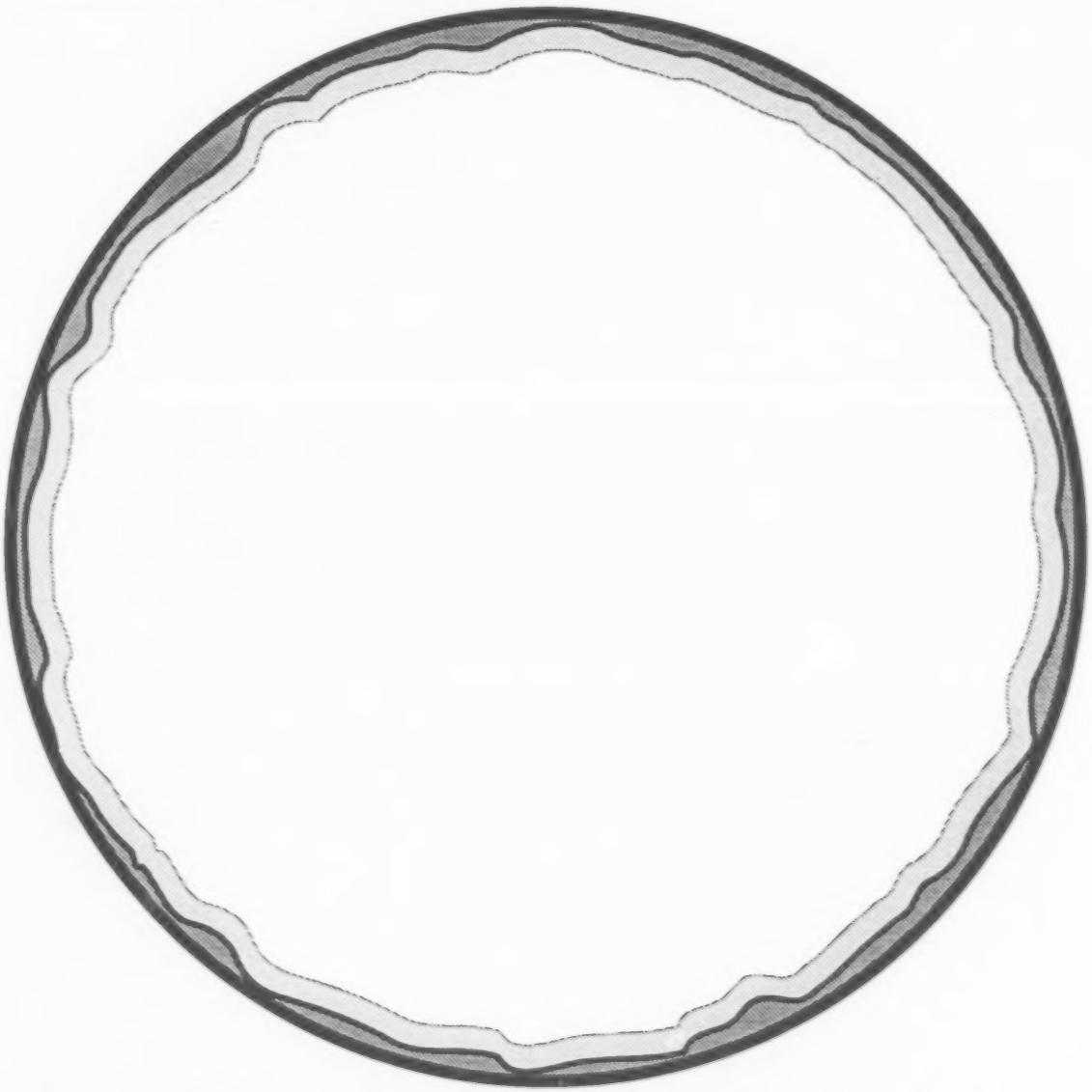
D. Evaluation
Did the students participate in the activity?

E. Related Activities
1. Have students, as a group, write about the experience of cooking pizza.
2. Have students write individually about eating their favorite foods.
3. Have students list the food groups represented on their pizza.

Name _____

Pizza Parts A

Draw lines with a ruler to cut the pizza in half. Draw another line to cut the pizza in fourths. Now draw two lines to cut it in eighths.



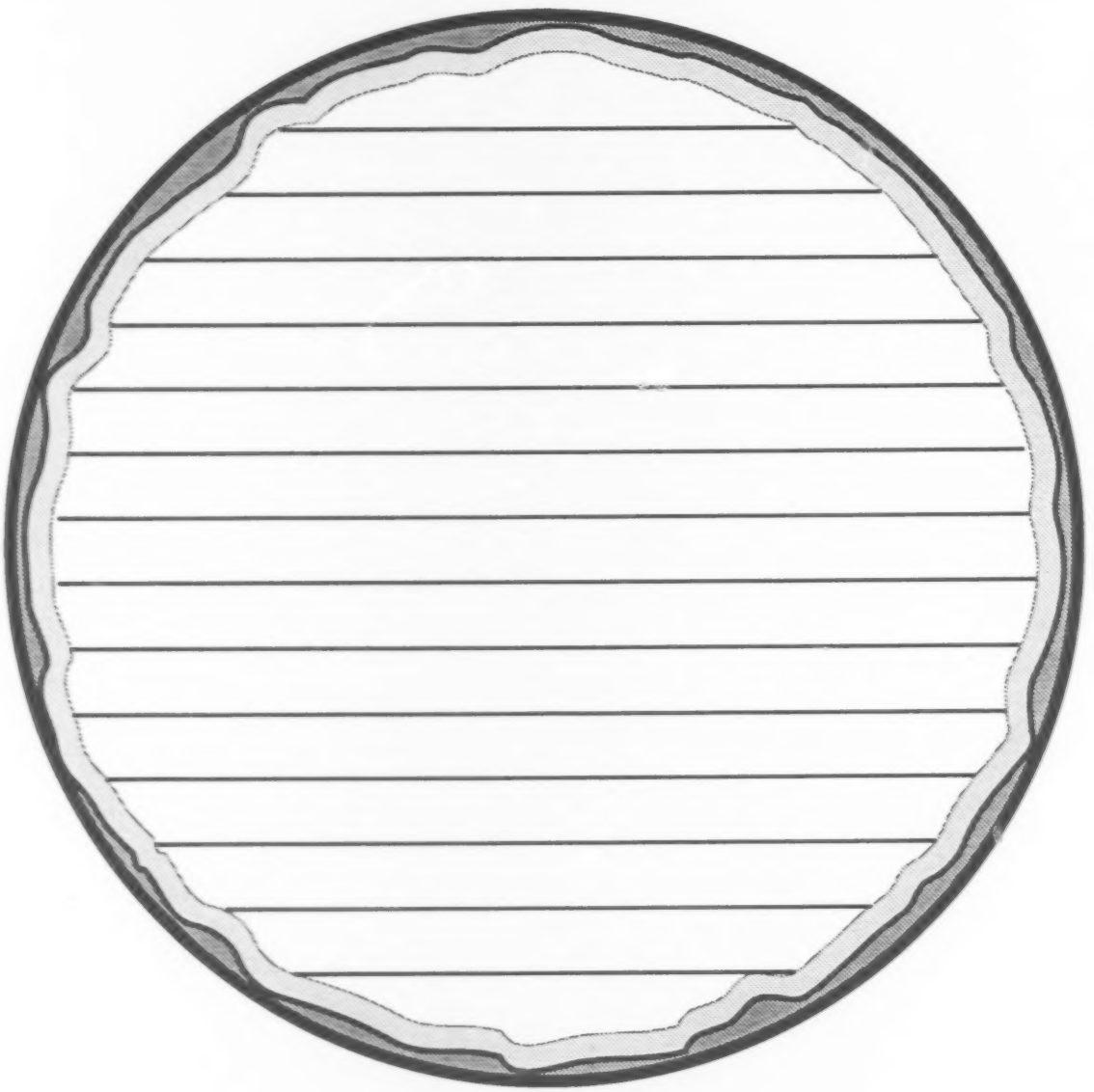
How many pizzas will it take to give everyone in your classroom one slice? _____ Two slices? _____

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture. 1/92

Name _____

Pizza Parts B

List pizza ingredients or write a story. Cut out this page and one from plain paper to draw and color the top of a pizza.



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture. 1/92

PUMP UP WITH POPCORN S 31

SUBJECT: Science **GRADE:** 2

CONCEPT: V **COMMODITY:** Horticulture

LEARNER OUTCOME

Grade Two: I. C. Students will, give conditions before, during and after on event, identify qualitative and quantitative changes.

LEARNER OBJECTIVE

The student will be introduced to the science term "expand" and will use popcorn to conduct on experiment that illustrates the term.

LESSON (No student worksheet is needed for this lesson.)

A. Step-by-Step Instructions

1. Show students a handful of popcorn. Ask what it is and what we do with it? Introduce the word "expand" (to open wide, to occupy more space, to enlarge).
2. Have students measure and examine a cupful of popcorn. Pop it, then have them measure and examine it again.
3. Share background material with students.
4. Fill a small jar with popcorn kernels. Pour in water up to the rim. Place a plastic dish or lid on top of the jar. Wait one hour and check the jar. The kernels will begin to swell and lift the cover slightly. Check the jar again the next morning. The water-soaked kernels should have pushed the cover off the jar.

B. Background

There are five different kinds of corn but only one kind that pops. Popcorn grows on a cob, just like the corn you eat in the summer. Popcorn farmers let the corn dry before they take it from the plant.

Popcorn kernels are dry on the outside, but they have water stored inside. When you heat popcorn, the water inside begins to boil. As it turns to steam, the water expands, or takes up more space. This causes the corn to swell until the steam shoots out, and the corn pops. Air rushes in and fills the space left by the escaped steam.

The popcorn you buy in the store is usually white or yellow, but popcorn kernels can be almost any color. Some of them are red; some are purple, and some are black. No matter what color it is on the outside, all popcorn is white when popped. Snowflake popcorn pops up big and is shaped like a cumulus cloud. Mushroom popcorn pops smaller and rounder. It is good for making candy.

Soak kernels that won't pop in a quart jar with one tablespoon of water. Let them soak for 16-24 hours. Try popping them again.

Source: OSU Cooperative Extension Service, Horticulture Dept.

C. Resources

Books

Aliki, *Corn Is Maize,* Harper Row, 1991.
de Paola, Tomie, *The Popcorn Book,* Scholastic, Books, 1978.
Kellogg, Cynthia, *Corn: What It Is, What It Does,* Greenwillow, 1989.
Thayer, Jane, *The Popcorn Dragon,* Morrow, Junior Books, 1953.

Additional Resources

The Popcorn Institute, 111 East Wacker Drive, Suite 600, Chicago, IL 60601,

(free popcorn teaching guide for grades 1-3, including nutritional information and the history of popcorn, 45 cents and an eight- by 12-inch self-addressed stamped envelope.)

D. Evaluation

1. Do the students have a basic understanding of the word "expand." Did they observe and enjoy the experiment?

E. Related Activities

1. Blow up a balloon and watch the rubber expand as it fills with air. Release the air from the balloon, and introduce the word "contract" (to draw together sides or particles, to bring in on).
2. Use balancing scales to compare the weight of popcorn with that of common things like cotton balls, pencils, rubber bands or string.

THE WONDERFUL WATER CYCLE

SUBJECT: Science **GRADE:** 2

CONCEPT: IV **COMMODITY:** Water

LEARNER OUTCOME

Grade Two: II. A. Students will, given a set of objects, organisms or events, identify the properties by which they could be ordered.

LEARNER OBJECTIVE

Students will be introduced to the processes of evaporation and condensation as they observe physical changes in water.

LESSON (No student worksheet is needed for this lesson.)

A. Step-by-Step Instructions

1. Bring the following materials to class: hot plate; saucepan; two large aluminum cooking pans; plenty of ice cubes.
2. Share the background information.
3. Place a few ice cubes in the saucepan, and let students look at them and touch them while they are still solid.
4. Heat the ice cubes slowly, using the hot plate, so students can observe how matter changes from a solid to a liquid state.
5. After the ice cubes melt, allow the water to boil, and explain that steam is water in its gaseous state.
6. Place more ice cubes in the aluminum pan, and hold it over the steaming saucepan. As the water droplets form on the bottom of the pan ask students what form the droplets have taken.
7. Collect the condensing droplets by slanting the first aluminum pan and letting the droplets run into the second aluminum pan.
8. Have students draw pictures showing one form of water and something that needs water to live.

B. Background

Water is a very important substance in our lives. Without water we could not survive. Next to air, water is the second most abundant substance on the planet Earth. Most of the Earth's water is salt water that we cannot drink. Salt water is found in ocean and seas. The water we drink is fresh groundwater, which comes from lakes and streams. Since we only have a small amount of fresh groundwater on the Earth, it is very important that we learn to use it wisely.

All of the Earth's water can be found in one of the three states of matter--solid, liquid or gas. Water goes through all three states of matter in the ***water cycle****. The water cycle is the continuous movement of the water from Earth to atmosphere and back again.*

The heat from the sun causes the water to evaporate. In this form the water becomes clouds or fog or steam. As the gaseous water moves upward it runs into cooler air. In the cooler air the gaseous water condenses and becomes rain droplets or ice crystals. The rain and snow that is formed this way falls to the ground. This is called precipitation.

Most of the precipitation falls in the oceans and seas. Some of it evaporates and goes back into the air. The rest reaches the ground and soaks into the earth to become part of the groundwater supply. From there the water cycle starts all over again.

Source: OSU Cooperative Extension Service, Water Quality Task Force

C. Resources

Books

Gibbs, B., *Ocean Facts*, EDC, 1990

Stephen, Richard, *Rivers*, Troll Associates, 1990.

Additional Resources

"Aquatic Project WILD," Luann Waters, Conservation Education, Oklahoma Department of Wildlife Conservation, 1801 N. Lincoln, Oklahoma City, OK 73105 (activity guide for teaching water training required for teachers).

"Peter's Magical Water Journey," Department of Water Resources, 1416 9th St., Room 338, P.O. Box 942836, Sacramento, CA 94236, (916)445-9371 (flannel board story, with script and directions for making characters).

"Water Play," Department of Water Resources, 1416 9th St., Room 338, P.O. Box 942836, Sacramento, CA 94236, (916)445-9371 (booklet with facts and activities about water).

D. Evaluation

Does the student understand the terms "condense" and "evaporate?" Can the student explain the water cycle?

E. Related Activities

Give each student a paper drinking cup and seal-locking bag. Instruct students to hold the bag by one corner so it is in a diamond shape. Tape the cup inside the bag to avoid slippage. Next, put two ounces of water in the cup. Seal the bag, and tape it to a sunny window. Have students record what they observe after 10 minutes, 30 minutes, two days and four days. (The water should evaporate from the cup, condense on the sides of the bag and collect in the bottom of the bag.)

WE FURNISH YOUR FOOD

S 33

SUBJECT: Science

GRADES: 2

CONCEPT: I

COMMODITY: Farm Animals

LEARNER OUTCOME

Grade Two: II. E. The student will place an object, organism or event into a classification system.

LEARNER OBJECTIVE

The student will learn what foods come from which farm animals.

LESSON

A. Step-by-Step Instructions

1. Summarize background information for students.
2. Have students draw lines from the animals to the products they produce.
3. Have students color the pictures on the student worksheets.

B. Background

The food you eat is bought and sold many times before it finally gets from the farmer to your table. After the food grows on the farm, the farmer sells it to a food processing plant. There workers wash it, then cook it, freeze it or cut it up before they put it into packages. Food distributors buy the food, then sell it to grocery stores all over the country. After your parents bring it home from the grocery store, it still must be prepared.

Much of the food you eat grows right here in Oklahoma. Milk comes from ***dairy cows****. Beef comes from the dairy cow's cousin, the* ***beef steer****. Oklahoma farmers like to raise beef cattle, because they can turn feed into many pounds of meat for us to eat. From beef cattle we get beef steak, hamburger and other beef products.*

Swine *production is another important industry in our state. Swine is another word for pigs. Pigs produce pork chops, a popular red meat. Pigs have also been used in medical research. The valves from pig hearts are used in human heart transplants.*

The poultry, or chicken, industry is growing in our state. Layers are raised to produce eggs, and broilers are raised for meat. The baby chicks that will grow into layers and broilers are hatched in machines called incubators. Eggs hatch after 21 days in the incubator.

OSU Cooperative Extension Service, Animal Sciences Department

C. Resources

Books

Gibbons, Gail, *Farming,* Holiday House, 1988.
Kellogg, Steven, *Chicken Little,* Mulberry, 1985.
King, P.E., *Down on the Funny Farm,* Random House, 1986.
Pryor, Bonnie, *Greenbrook Farm,* Simon & Schuster Books for Young Readers, 1991.

D. Evaluation

The correct answers on the student worksheet are as follows: 1. bacon and pork chop/pig; 2. drumstick and egg/chicken; 3. milk/dairy cow; 4. beef steak/beef steer; 5. bread and cereal/wheat.

E. Related Activities

1. ***Milkshakes*** - Make milkshakes in class. The following recipe makes one serving.

1 cup milk
1/2 cup fruit (your choice)
1/2 cup ice cream

Place milk and ice cream in blender or some type of shaker. Blend until ice cream is mixed with milk. Add fruit and blend five more seconds. Pour into glass and serve.

2. ***Blown Eggshells*** - Each child needs one egg. Gently poke a hole in each end of the egg with a large straight pin. The student will gently blow in one of the holes. The contents of the egg will come out the other hole. Collect the contents, and freeze for later use. Wash eggshells in warm, soapy water. Let the water seep into the shell. Shake gently to clean. Pour out the water, and lay the egg on a towel to dry. After the eggs are dry, paint pictures on the shells, or roll them in glue, and sprinkle glitter on them. Thread a ribbon through the holes. Hot-glue one end to keep it from slipping. Hang the eggs up in the classroom.

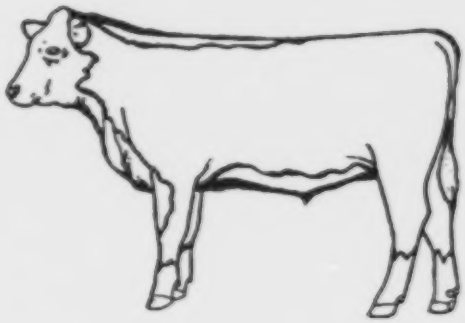
Name _____

We Furnish Your Food

Draw lines between the animals and the foods they produce. Color the pictures.

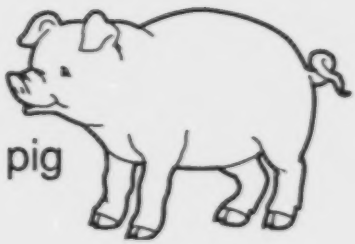
steak

hamburger



beef steer

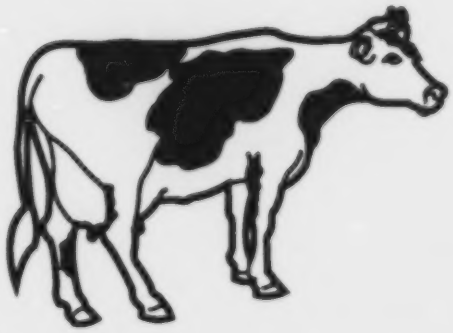
bacon



pig

drumstick

pork chop



dairy cow

cheese

egg

chicken

milk

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

WHERE'S THE BEEF?

S 34

SUBJECT: Science

GRADES: 2

CONCEPT: V

COMMODITY: Beef

LEARNER OUTCOME

Grade Two: I. B. 4. The student will identify plant and animal structures and describe the function of each.

LEARNER OBJECTIVE

Students will become visually aware of the different shape of wholesale cuts of beef.

LESSON

A. Step-by-Step Instructions

1. Discuss beef processing, using the background information.
2. Pass out student worksheet A. Have students color the puzzle pieces red.
3. Pass out student worksheet B. Have students glue the puzzle pieces where they fit on the outline of the steer. There is no puzzle piece for the head.
4. Go over the names for the wholesale cuts of beef. Ask students if they recognize any of the names.

B. Background

The meat your parents buy in the store comes from the cattle you see standing along the road in pastures and feedlots. When a beef animal weighs about 1,200 pounds, it is sent to a ***processing plant.*** *Oklahoma beef goes to processing plants in western Kansas, Oklahoma, Nebraska and Texas.*

At the processing plant the beef animals are quickly killed and cut into large pieces of meat. Then the meat is put in boxes and shipped to grocery stores. At the grocery store the meat is cut into smaller pieces. Then the meat cutter wraps the meat and puts a price on it.

Source: OSU Cooperative Extension Service, Animal Science Dept.

C. Resources

Books

Cousins, Lucy, *Farm Animals*, Tambourine, 1991
Kaizuki, Kiyonori, *A Calf is Born*, Orchard, 1990.
Kindersley, Darling, *Farm Animals*, Aladdin, 1991.

Additional Resources

"Happiness is a Beef Cow," Shirley A. Domeier, Rt. 2, Box 77, New Ulm, MN 56073 (24-page coloring book, 50 cents each with a minimum order of 20).

"Twelve Myths and Facts," National Cattlemen's Association, 5420 S. Quebec St., Englewood, CO 80155 (videotape for grades 1-3 and 4-6, $15).

"Beef From the Farm to You," Oklahoma Beef Industry Council, 5101 N. Classen, Ste. 210, Oklahoma City, OK 73118, (405) 840-3777 (coloring book).

"Farm Animals, Close Up and Very Personal," Stage Fright Productions, P. O. Box 373, Geneva, IL 60134 (VHS tape $16.95).

D. Evaluation

Were the students able to match the beef puzzle pieces to the outlines on the steer? Are students now familiar with the names of some cuts of beef?

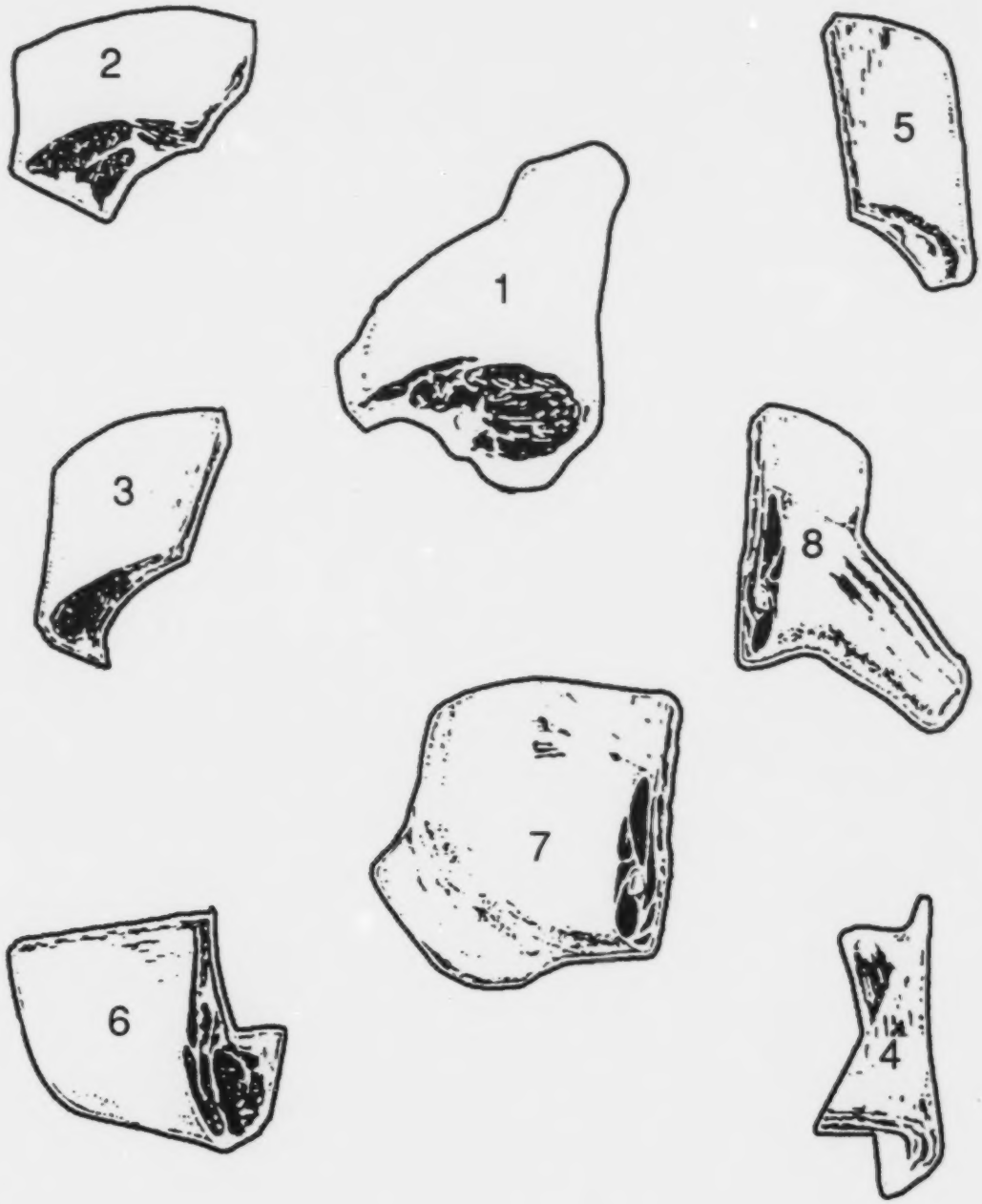
E. Related Activities

1. Have a local meat cutter make a class visit to explain a meat cutters job.
2. Enlarge the steer outline on worksheet B and place it on a bulletin board. List the cuts of beef in the lower left corner of the bulletin board. Attach a string to each word. Have students connect the words to the correct spaces on the steer outline.
3. Invite a dietitian to class to discuss the place of meat in a balanced diet.

Name _____

Where's the Beef? A

Color the puzzle pieces red. Cut out and follow the directions on worksheet B.

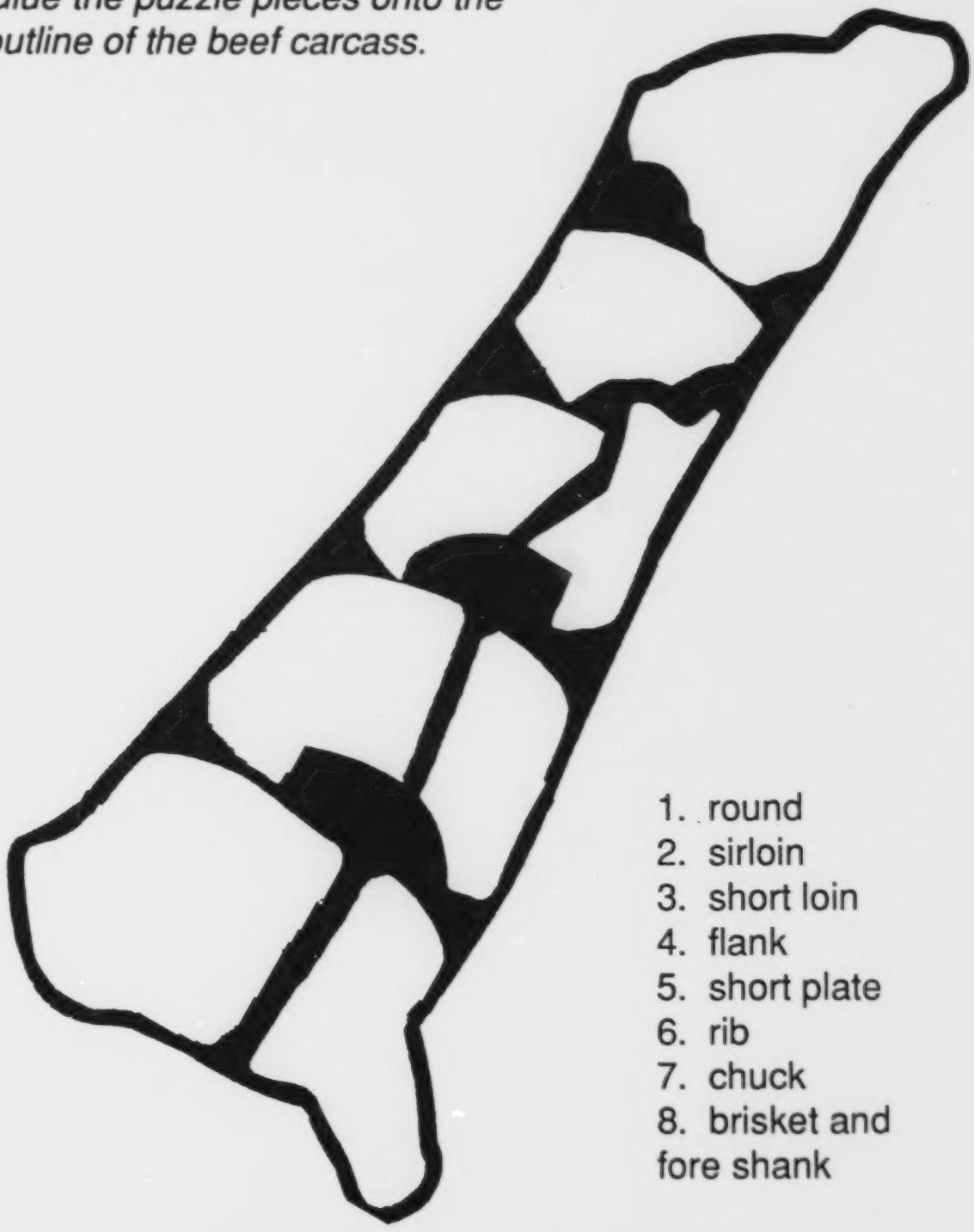


Produced by Oklahoma State University Cooperative Extension Service
in cooperation wtih the Oklahoma Department of Agriculture, 1992

Name _____

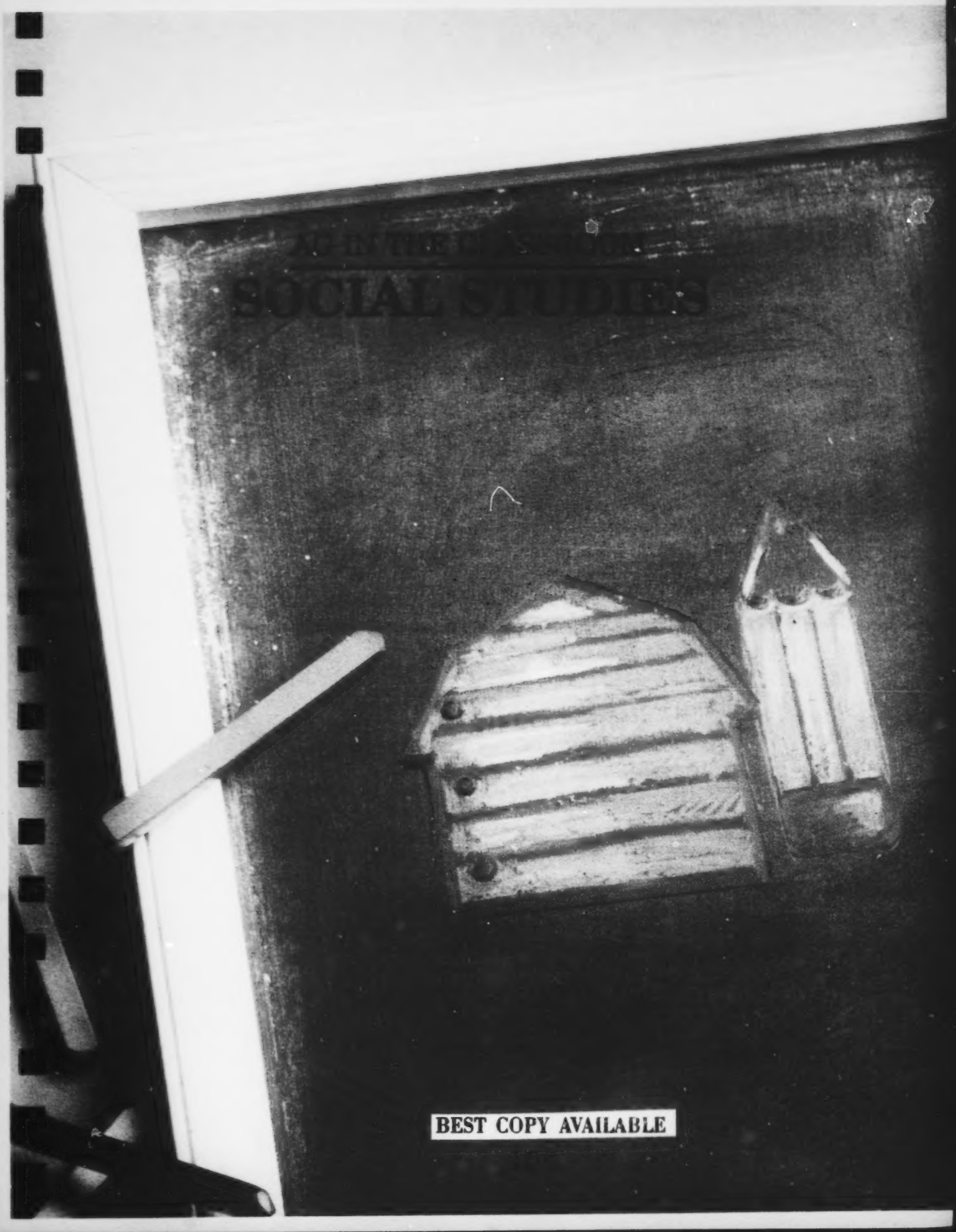
Where's the Beef? B

Glue the puzzle pieces onto the outline of the beef carcass.



1. round
2. sirloin
3. short loin
4. flank
5. short plate
6. rib
7. chuck
8. brisket and fore shank

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992



BEST COPY AVAILABLE

SEEDS FOR THE SEASON SS 1

SUBJECT: Social Studies **GRADES:** K-2

CONCEPT: III **COMMODITY:** Horticulture

LEARNER OUTCOME

Grade one: I. Students will demonstrate a knowledge of the interrelationships among individuals and their environment in the state of Oklahoma, the United States, and the World in the past, present, and future.

LEARNER OBJECTIVE

The students will review the seasons of the year and associate some Oklahoma-grown fruits and vegetables to the seasonal changes.

LESSON (No student worksheet is needed for this lesson.)

A. Step-by-Step Instructions

1. Review the four seasons of the year and the types of weather associated with them. Introduce the word "harvest."
2. Have students name the types of fruits and vegetables eaten during each season.
3. Discuss what makes it possible to have some fruits and vegetables year-round (canning, freezing, drying).

B. Background

harvest - the season for gathering grain and fruits, the gathering up of a crop.

Farmers have certain jobs to do during each season. The weather can have quite an effect on how well they can do these jobs. If there isn't enough rain after the farmer plants the crops in the springtime, he or she may have to spend a lot of time and money watering. Otherwise the tender, young plants will dry up. If it rains too much when it's time to harvest the crops, the farmer may not be able to get into the fields to get the crops out before they rot.

Most fruits and vegetables can be harvested during only one season of the year. Strawberries and lettuce are harvested during the spring. Tomatoes and blackberries are harvested in the summer, and apples and pumpkins are harvested in the fall. What do you think we harvest in winter? Winter is a very harsh season. There are no crops harvested in the winter. The ground is left **dormant**. *That means it is left alone to rest.*

Here are some of the foods we associate with the different seasons:

Spring	Summer	Fall
strawberries	blackberries	apples
lettuce	peaches	pumpkins
onions	tomatoes	Indian corn
peas	squash	peanuts
radishes	beans	winter squash
asparagus	cherries	
spinach	sweet corn	
	watermelon	

Source: OSU Cooperative Extension Service

C. Resources

Books

Adoff, Arnold, *In For Winter, Out For Spring,* Harcourt, Brace, Jovanovich, 1991.
Aliki, *The Story of Johnny Appleseed,* Simon & Schuster, 1987.

Balan, Bruce, *The Cherry Migration*, Green Tiger, 1988.
Bourgoing, Pascale, *Fruit*, First Discovery Book, Scholastic, 1989.
Bourgoing, Pascale, *Weather*, First Discovery Book, Scholastic, 1989.
Carle, Eric, *The Very Hungry Caterpillar*, Harper Trophy, 1985.
Hirschi, Ron, *Harvest Song*, Viking Penguin Junior, 1991
Miller, Jane, *Seasons on the Farm*, Prentice-Hall, 1986.

D. Evaluation

Can the students name the seasons of the year and associate different kinds of weather with seasonal changes? Can students identify some fruit harvested in each season?

E. Related Activities

1. Have a tasting party to sample fruits and vegetables of the season.
2. Toast ***pumpkin seeds.***
   Wash the seeds, and dry them on a paper towel. Grease a cookie sheet, using one to two tablespoons of melted butter. Spread the seeds on the cookie sheet. Sprinkle them with salt. Bake the seeds in a 300-degree oven for one hour or until golden brown.
3. Have a taste test. Have students taste frozen, dried, canned and fresh foods. Then have them vote on which kind of food they like best.
4. Have students identify special holidays that occur during specific seasons.

OKLAHOMA FARM COLORS SS 2

SUBJECT: Social Studies GRADES: K-1

CONCEPT: I COMMODITY: Miscellaneous

LEARNER OUTCOME

Kindergarten, Creative Skills: 4. The student will develop visual awareness.

LEARNER OBJECTIVE

The student will identify the objects on each page as things that can be found on an Oklahoma farm. The student will listen to the teacher read the text and color the Oklahoma farm item on each page.

LESSON

A. Step-by-Step Instructions

Worksheets A and D

1. Identify the farm picture.
2. Read the caption and discuss it with your students.
3. Have students color the picture.

Worksheet B

1. Identify the farm picture.
2. Brainstorm with students about the types of animals that could live in a barn.
3. Have students color the picture.

Worksheet C

1. Identify the farm picture.
2. As a class, have students list jobs a tractor might help with on the farm. Have students compare the tractor to trucks or other vehicles.
3. Have students color the picture.

Worksheet E

1. Identify the farm picture.
2. Read the caption and discuss it with your students.
3. Have students color the picture and draw a scene showing how pigs keep cool.

Worksheet F

1. Print in color words on different sections of the rooster's body.
2. Identify the farm picture.
3. Have students color the picture according to the color words listed.

B. Background

All the items pictured on the color sheets are farm-related and can be found on different farms throughout the state of Oklahoma.

Source: OSU Division of Agricultural Sciences and Natural Resources

C. Resources

Books

Adams, Pam (illus.), *Old MacDonald Had a Farm,* Child's Play Ltd., 1975.
Civardi, Anne, *The Farmer,* EDC, 1987.
Salmon, Michael, *Who's Behind the Door? At the Farm,* Steck-Vaughn, 1990.
Stevens, Janet (illus.) *It's Perfectly True!* Holiday House, 1988 (adapted from Hans Christian Andersen).
Tresselt, Alvin, *Wake Up, FARM!* Lothrop, Lee & Shepard, 1991.

Additional Resources

Good Apple, 1204 Buchanan St., Box 299, Carthage, IL 62321-0299 (farm animals poster, GA 1371, 25 for $6.25, additional quantities, 25 cents each).

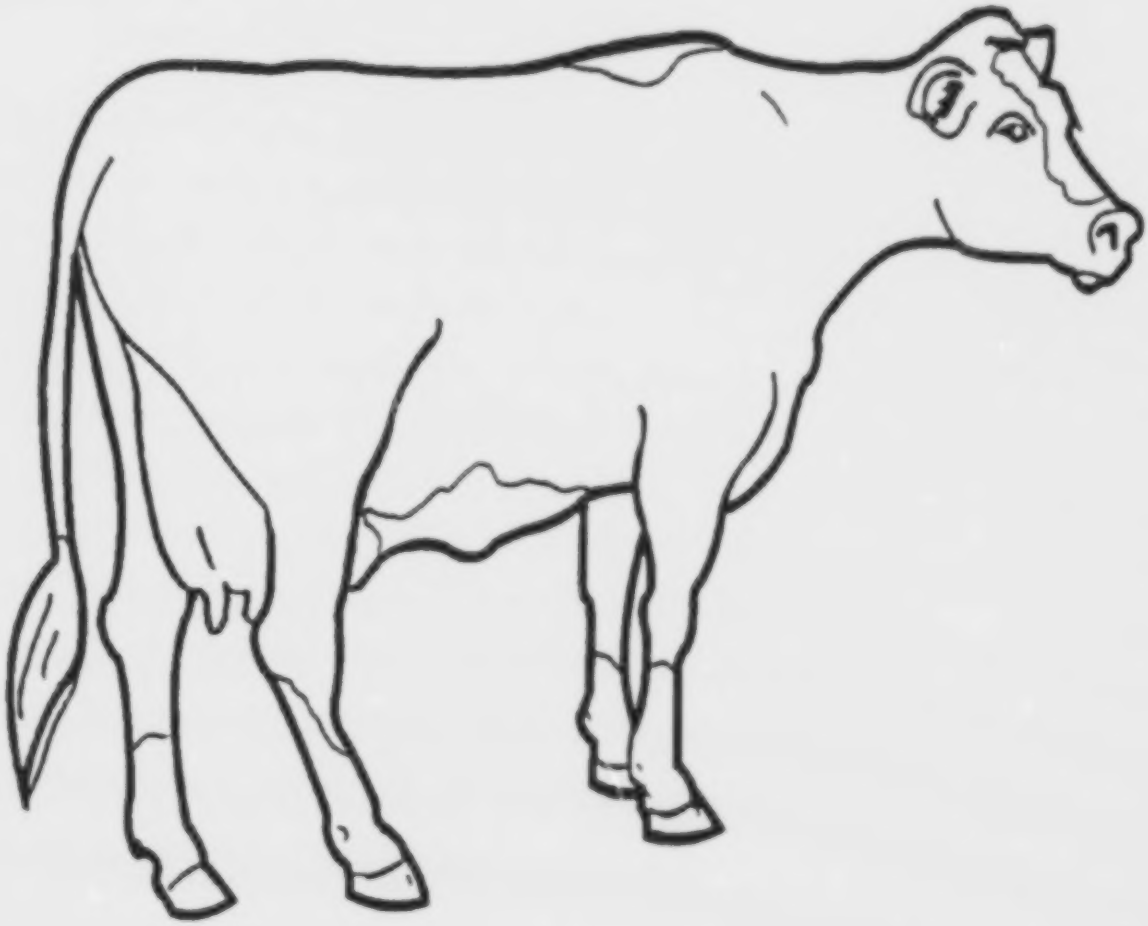
1-800-435-7234.

D. Evaluation
Did the student understand the written text after hearing it read aloud. Did the student complete the page by coloring the picture.

E. Related Activities
1. Make a farm booklet over a one-week period, using a different page every day.
2. Use the booklet for statehood week activities during April.
3. After the students have completed their color sheets, have them cut the pictures out and use them to create a farmyard bulletin board.

Name _____

Oklahoma Farm Colors A

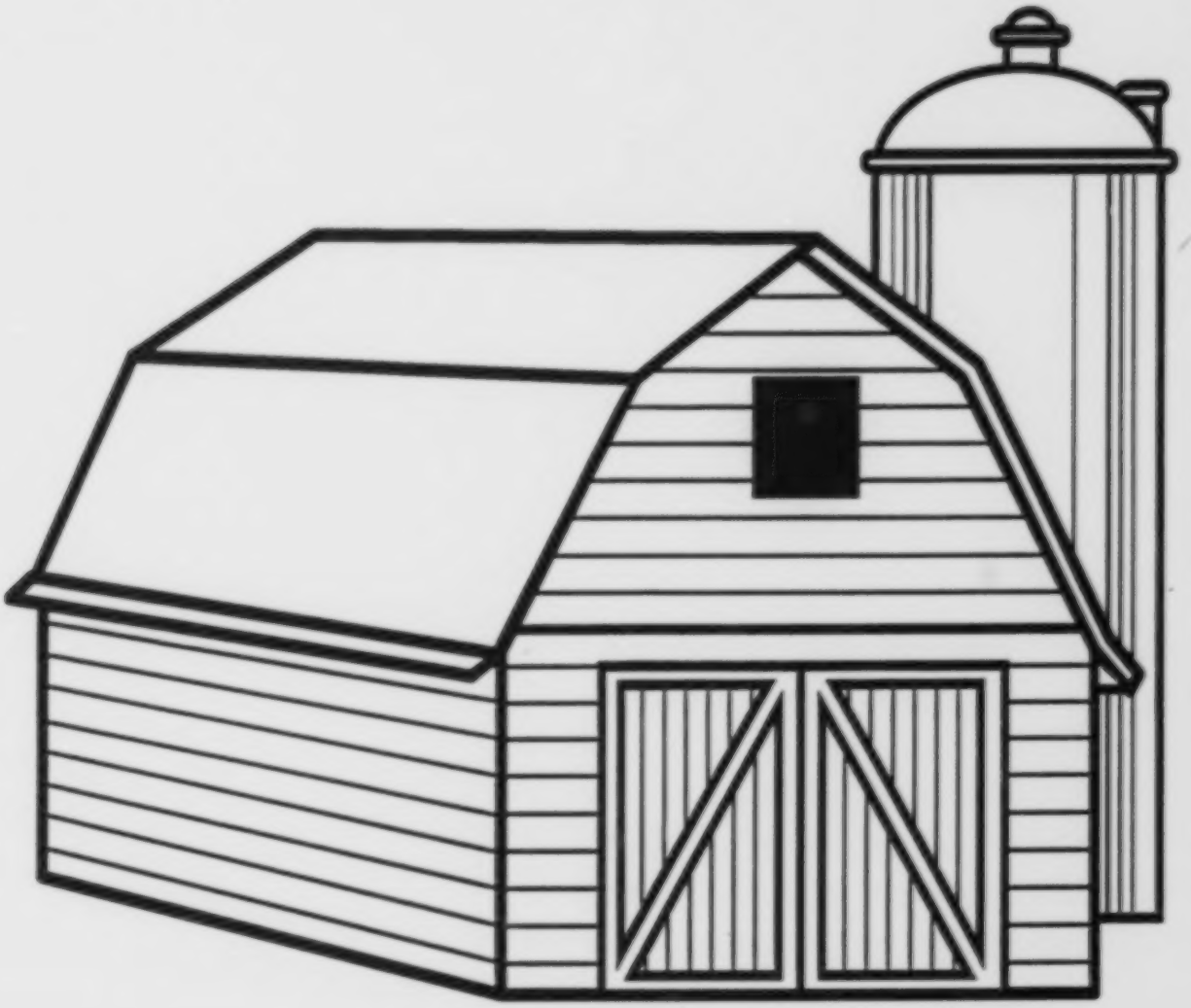


Cows are raised for milk and meat in Oklahoma.

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Oklahoma Farm Colors B

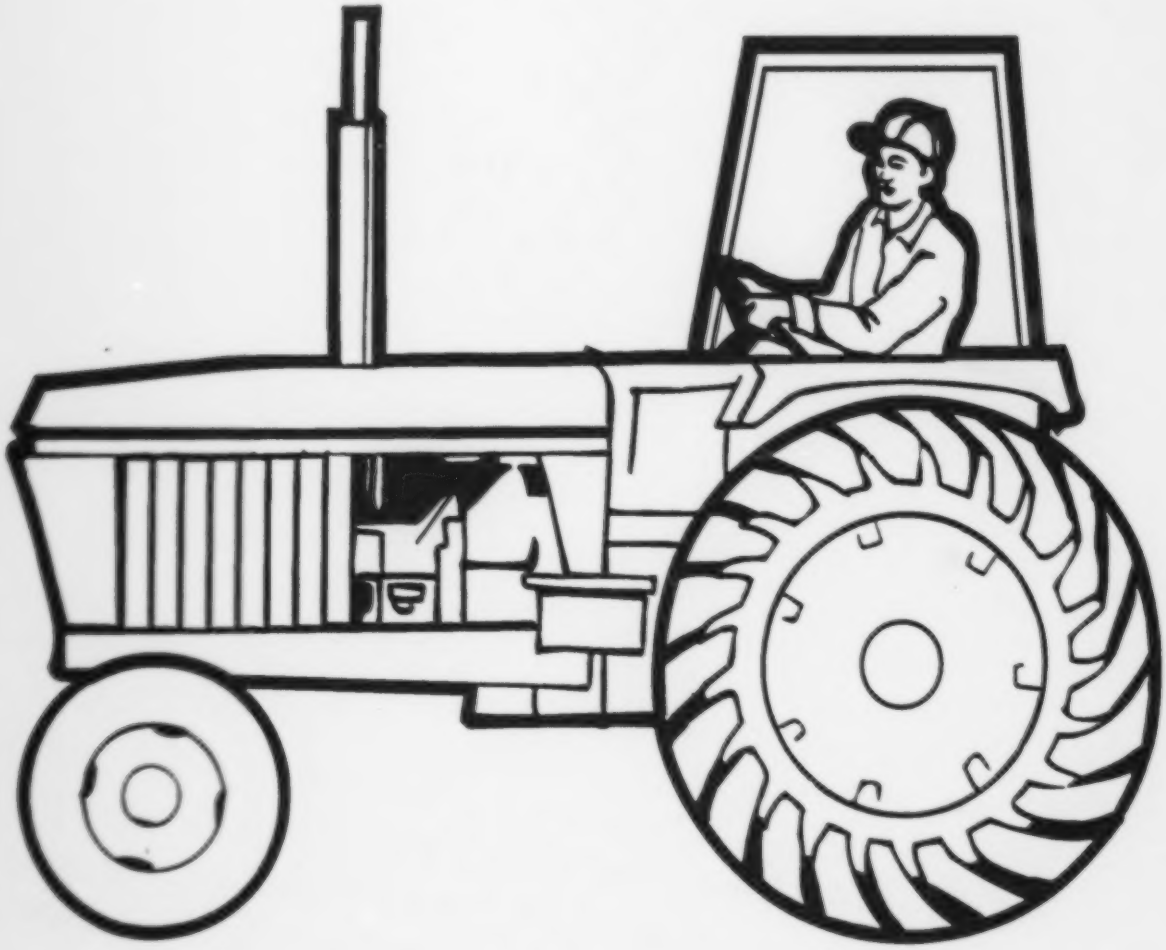


On many Oklahoma farms you can see barns and silos. Color this barn and silo.

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture. 1992

Name _____

Oklahoma Farm Colors C



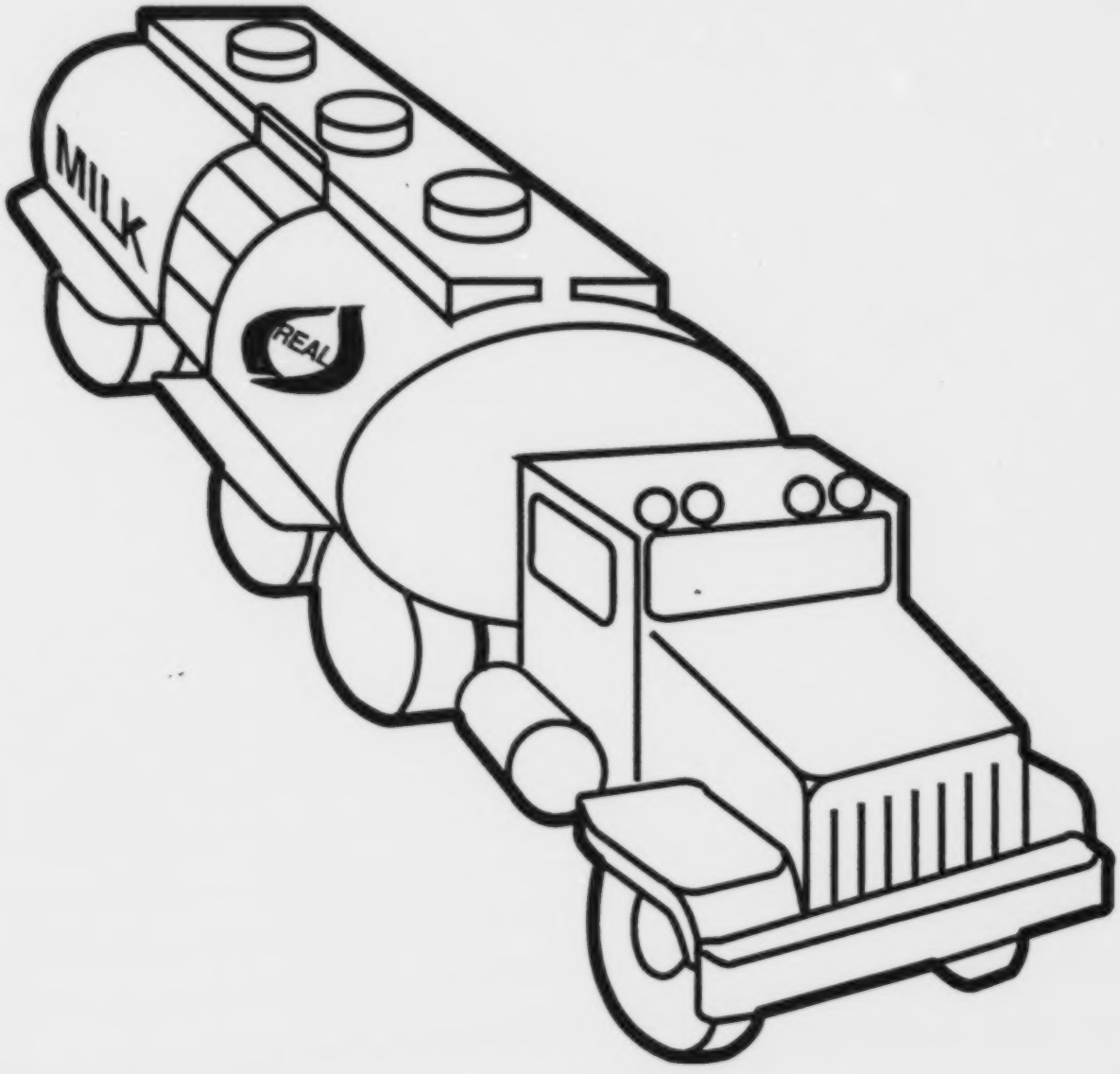
Tractors help Oklahoma farmers do many jobs.

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Ag in the Classroom

Name _____

Oklahoma Farm Colors D

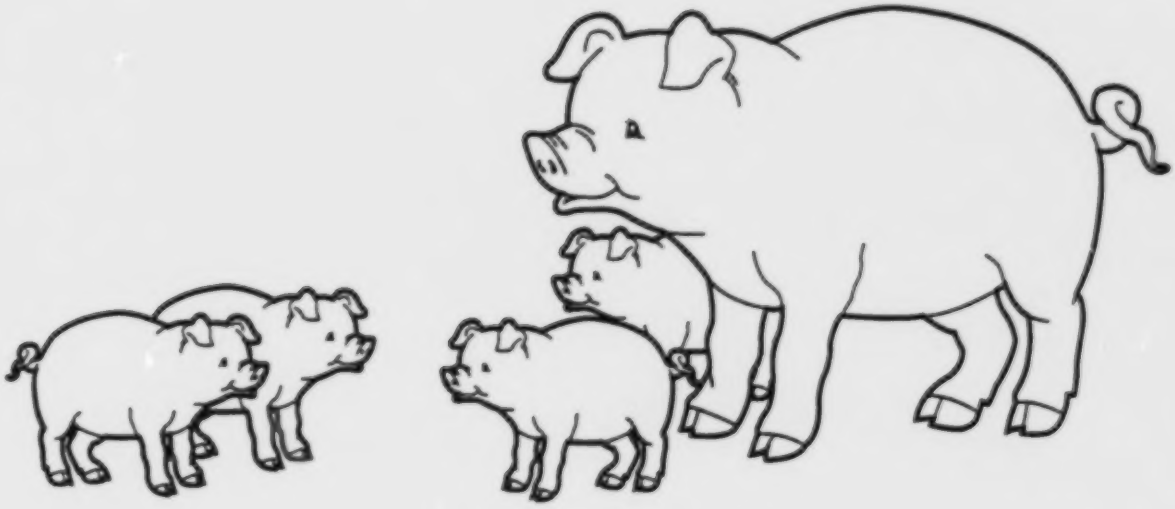


Look for tank trucks filled with milk on Oklahoma roads.

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Oklahoma Farm Colors E

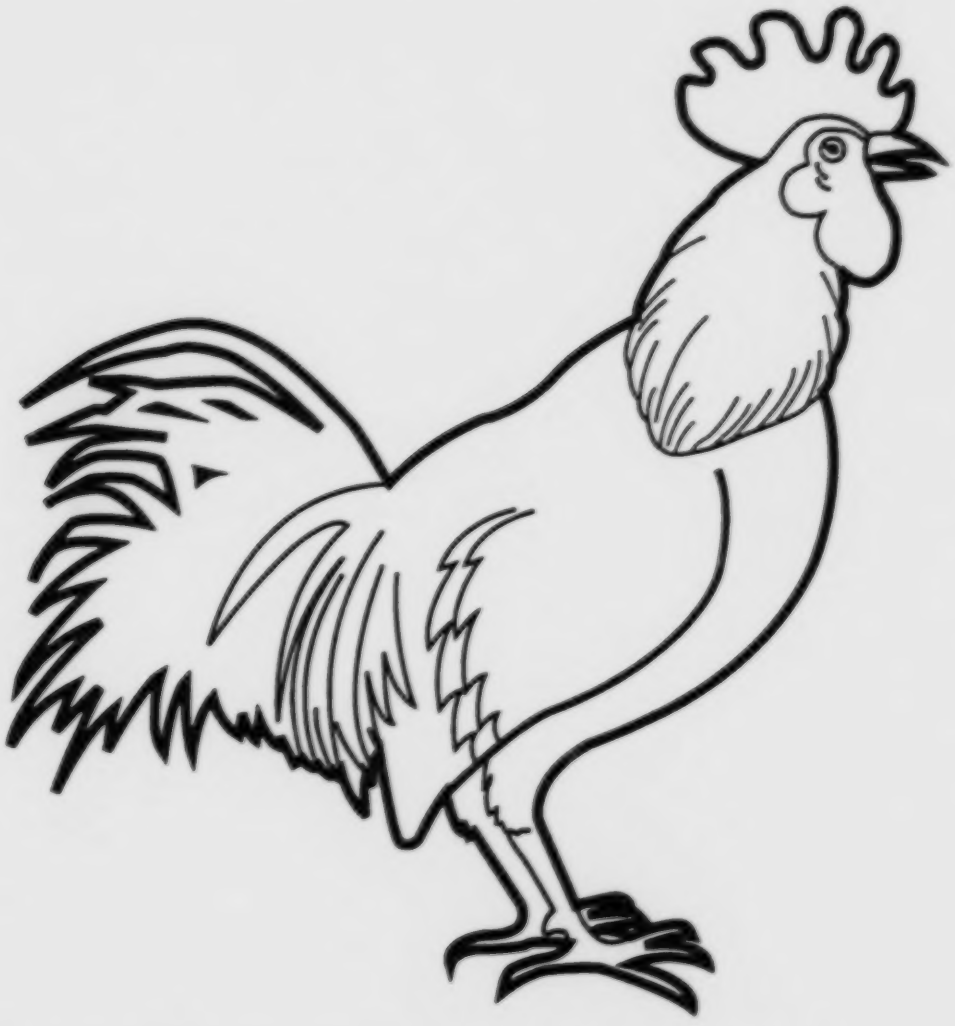


Oklahoma summers are hot. Pigs keep cool by rolling in the mud.

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Oklahoma Farm Colors F



The rooster is the first animal to welcome the Oklahoma morning. What sound does a rooster make?

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

I'M A FARMER. I'M A RANCHER.

SUBJECT: Social Studies

GRADES: 1-2

CONCEPT: VI

COMMODITY: Careers

SUGGESTED LEARNER OUTCOME

Grade Two: IV. A. 4. The student will describe the roles of workers who provide goods and services.

LEARNER OBJECTIVE

The student will become familiar with the many jobs farmers and ranchers must manage.

LESSON

A. Step-by-Step Instructions

1. ***Worksheets A and B*** - Have students write definitions of the terms "farmer" and "rancher" or have them write paragraphs describing the jobs farmers and ranchers might do.
2. ***Worksheet C*** - Have students follow the written directions on the worksheet.
3. ***Worksheet D*** - Use the "Venn Diagram" to illustrate how to compare a farmer and a rancher. Since the farmer uses a plow, and the rancher usually does not, the student would place the picture of the plow in the farmer's circle. The rancher uses an ATV (all-terrain vehicle) for herding cattle. A farmer doesn't have quite as much use for one. So the ATV would go in the rancher's circle. Since both the farmer and the rancher use a computer, the student should write "computer" in the space where the circles overlap.

B. Background

Farmers and ranchers must do many different jobs to keep their farms and ranches running smoothly. On one day a sick animal might need doctoring. Then the farmer or rancher will have to use veterinary skills. Not only that but the he or she must decide which medicine would be best for the least amount of money. That calls for accounting skills.

On the next day it might be time to think about selling the wheat. The farmer or rancher may use a computer to figure out when is the right time to sell the wheat so he or she can get the best price.

Farmers and ranchers have to juggle all these jobs to make sure everything is running smoothly.

Source: OSU Division of Agricultural Sciences and Natural Resources

C. Resources

Books

Civardi, Anne, *The Farmer,* EDC, 1986.
Collins, David R., *Pioneer Plowmaker, A Story About John Deere,* Carolrhoda, 1990.
Easton, Patricia, *Stable Girl: Working for the Family,* Harcourt, Brace, Jovanovich, 1991.
Gibbons, Gail, *Farming,* Holiday House, 1988.
Hall, Donald, *The Ox Cart Man,* Viking, 1979.

D. Evaluation

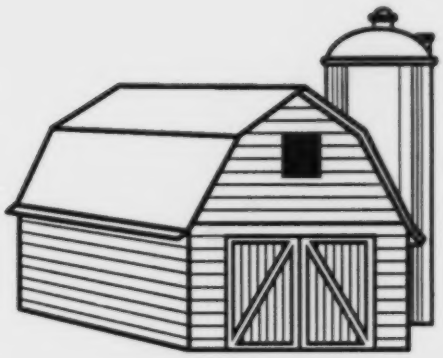
Worksheets A and B - Answers should be teacher-evaluated.
Worksheet C - The following words should be underlined: "planter/picker;" "carpenter;" "business manager;" "buyer/seller;" "computer programmer;" "botanist;" "pilot" (possible); "meteorologist;" "mechanic;" "conservationist;" "veterinarian;" "accountant."
Worksheet D - Answers should be teacher-evaluated.

E. Related Activities

1. Play *"Who Am I?"* Have one student describe a job and the other students guess what the job is.
2. Have students list farm and ranch words on an enlarged line drawing of a barn. Create an agricultural word wall for students to use as a reference.
3. Brainstorm with students about the jobs, tools and equipment a farmer/rancher uses.

Name _____

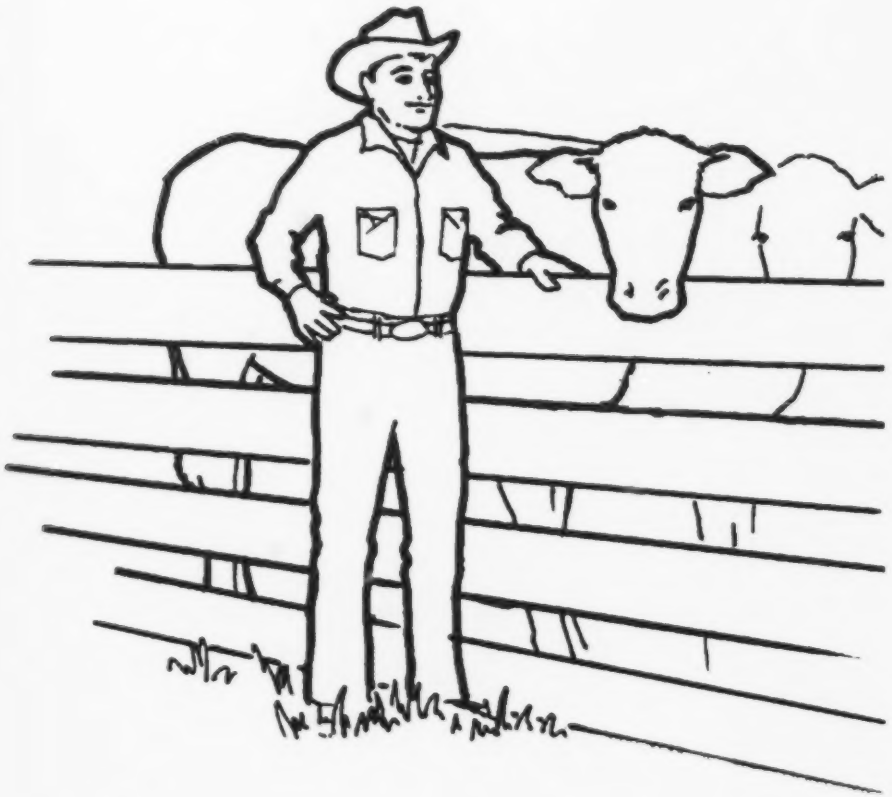
I'm a Farmer. I'm a Rancher. A



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

I'm a Farmer. I'm a Rancher. B



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

I'm a Farmer. I'm a Rancher. C

Underline only the words that name jobs done on a farm or a ranch.

planter/picker	sales clerk	meteorologist
carpenter	botanist	policeman
TV announcer	pilot	mechanic
business manager	artist	conservationist
buyer/seller	actor	veterinarian
computer programmer		accountant

Farmers and ranchers must use many tools and other equipment to do their jobs. Circle all the words for farm or ranch equipment you can find.

a	s	i	n	c	u	b	a	t	o	r	c
h	p	d	i	s	c	b	t	j	p	g	o
t	r	a	c	t	o	r	o	f	a	x	m
r	a	z	r	r	m	a	d	d	i	g	p
o	y	e	q	u	b	a	l	e	r	w	u
u	e	c	k	c	i	n	j	c	h	b	t
g	r	o	c	k	n	n	l	m	v	k	e
h	f	p	e	y	e	q	u	p	p	m	r
m	i	l	k	m	a	c	h	i	n	e	i

Did you find all of these words?

tractor	**truck**	**milk machine**
combine	**baler**	**incubator**
sprayer	**trough**	**computer**

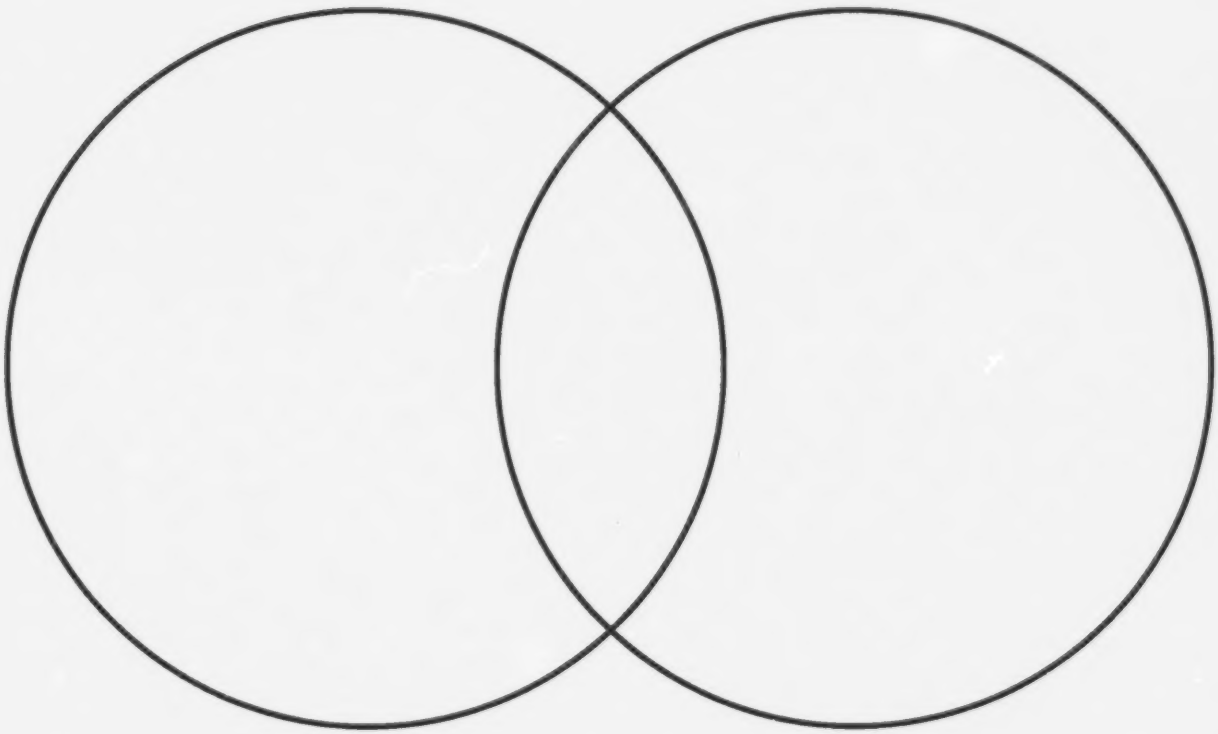
Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

I'm a Farmer. I'm a Rancher. D

When you work on a farm or ranch, you need to wear the right clothes and use the right tools and equipment. Use words or pictures to show what the farmer and the rancher wear and use. The things they both need can go where the circles overlap.

Farmer Rancher



The farmer and the rancher have to do many different jobs during the year. How many can you list on the back, using the above diagram?

Produced by Oklahoma State University Cooperative Extension Service
in cooperation wtih the Oklahoma Department of Agriculture, 1992

PECAN FINGER PRINTS

SS 4

SUBJECT: Social Studies

GRADES: 1-2

CONCEPT: III

COMMODITY: Pecans

LEARNER OUTCOME

Grade One: IV. A. 1. The student will compare and contrast members of the "class community" to identify likenesses and differences.

LEARNER OBJECTIVE

Students will learn about themselves as individuals and understand that things in nature also have traits that distinguish them from all others.

LESSON

A. Step-by-Step Instructions

1. Introduce the lessons by dividing students into groups and having the groups stand together. Refer to the groups as "clusters." Instruct each group to come up with a group definition of the word "cluster" ("a number of similar things growing together; things people collect together.")
2. ***Worksheet A*** - Share background information with your students. Have students follow the written directions on the worksheet.
3. ***Worksheet B*** - Make sure students' fingers are free of cuts. Students can make prints by rolling their thumbs over an ink pad, then rolling them onto their student worksheets or by covering their thumbs with graphite from the lead of a pencil, pressing the prints onto cellophane tape, then peeling the tape off carefully, and sticking it onto the worksheets.

B. Background

The pecan is a kind of hickory nut native to the U.S. It originated in the Mississippi River Valley and was a valuable food to early settlers there. Pecans are high in fat, but they are also a good source of vitamins, calcium, phosphorus and iron.

Pecan trees like to grow together in clusters, or groves. They can grow from 70 to 100 feet tall, and their branches will spread from 50 to 100 feet wide. Their roots grow deep. Their leaves are dark green, with a lighter underside. They have very little color in the fall.

Pecan trees have two kinds of flowers. One of the flowers produces pollen, and the other one produces the nut. The nuts grow inside a thin, four-part husk. They ripen between October and December. The nuts fall to the ground when they are ripe. Pecan growers harvest their pecans by picking them up off the ground. Sometimes they knock the nuts down with long poles.

There are many different kinds of pecan trees. Some trees have very small nuts. These nuts are hard to crack but very tasty. Other trees have large nuts with thin shells that are easy to crack. These are called "paper shell" pecans. Their shells aren't quite as thin as paper, but they are much easier to crack than the smaller pecans.

No two pecans have the same markings on their shells. Each one is as unique as a fingerprint.

Source: OSU Cooperative Extension Service, Horticulture Dept.

C. Resources

Books

Amery, Heather, and Annie Civardi, *The Know How Book of Print and Paint,*

EDC, 1977.
Emberley, Ed, *Great Thumbprint Drawings*, Little, Brown, & Co., 1977.
Katz, Marjorie P., *Fingerprint Owls and Other Fantasies*, M. Evans, 1972.
Wiseman, Ann Sayre, *Finger Paint & Pudding Prints*, Addison-Wesley, 1980.

D. Evaluation

Worksheet A - Did students complete the worksheets according to the directions. (The season is fall.)
Worksheet B - Answers are as follows: 1. yes; 2. no; 3. no.

E. Related Activities

1. Bring pecans to class so students can compare the shells. Then have students compare their own thumbs with those of their classmates.
2. Lift fingerprints off a glass. Clean the glass. Have student grasp the glass with one hand. Make sure the print doesn't get smudged. Sprinkle the print area with iron shavings. Take wide packing tape and place it over the iron shavings. Lift carefully and stick the tape to a clean sheet of paper.
3. Have students create fingerprint animals, using different colored ink pads and markers.
4. Talk about who uses fingerprints. Discuss the different ways they are used. Make fingerprint cards. Have each student write his or her full name, date of birth and the date the card is made. Print all fingers of both hands on the cards, if possible.

Name _____

Pecan Finger Prints A

Color the pecan tree, nut and leaves.

The pecan tree

The nut is brown with black patterns.

The leaves are dark green. They do not change color much in the fall.

Draw a cluster of pecan trees full of nuts.

*What season is it?*_____

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Pecan Finger Prints B

Unique - one of a kind, matchless. A person's fingerprints are unique to that individual. The pattern on a pecan shell is also unique.

Make prints of both your thumbs on tape, and stick them here. Then design your own pattern on the pecan shell.

left thumb

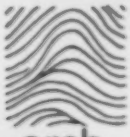
right thumb

pecan print

Investigate. Write yes or no to answer these questions.

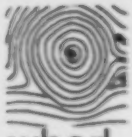
1. Can you see a pattern in the lines of your thumb print?____
2. Are the two prints alike?____
3. Could you redraw the pecan pattern and make it a perfect match?____

Classify. All fingerprints can be divided into three pattern classes. The three classes are called arch, loop and whorl. Compare your thumb prints to these.



arch

loop



whorl

*Which looks most like your print?*_____

Produced by Oklahoma State University Cooperative Extension Service in cooperation with the Oklahoma Department of Agriculture, 1992

FACE YOUR FEELINGS

SS 5

SUBJECT: Social Studies

GRADE: 2

CONCEPT: III

COMMODITY: Miscellaneous

LEARNER OUTCOME

Grade Two: II. A. 2. The student will demonstrate a knowledge of respect for the rights of others.

LEARNER OBJECTIVE

The student will recognize different types of feelings and the range of reactions to given situations.

LESSON

A. Step-by-Step Instructions

1. List some typical emotions on the board (happy, sad, excited, bored, etc.) Discuss the feelings you have listed and give students examples of some experiences that might produce these emotions.
2. Share the background material, then pass out student worksheets. Discuss the situations listed on the worksheets, and direct students to color the faces that would best express their own feelings in each situation.
3. Make a tally on the board to see how many students responded in the same way to the different situations.

B. Background

Feelings are a part of everyone's daily routine. On the farm the whole family is affected by the things that happen as part of the daily routine, because farm families live their jobs. Everyone in the family might react with great sadness to a calf that is born dead. But even though they are sad, family members must deal quickly with what has happened. They must understand their feelings, then put them aside so they can help the mother cow. Quick thinking and self-control can help a person make the best of difficult situations.

Adapted from the Georgia Cooperative Extension Service, 4-H and Youth Development

C. Resources

Books

DeWitt, Jamie, *Jamie's Turn*, Raintree, 1984.
Pellowski, Michael J., *Copycat Dog*, Troll Associates, 1986.
Polacco, Patricia, *Just Plain Fancy*, A Bantam Little Rooster Book, 1990.
Redhead, Janet Slater, *The Turkeygobbling Frog Show*, Steck-Vaughn, 1989.
San Souci, Robert D., *The Talking Eggs*, Scholastic, 1989.

D. Evaluation Methods

The students should feel comfortable enough to expose their true feelings about the situations.

E. Related Activities

Divide students into groups and give them cards on which you have written situations designed to evoke one of the emotions discussed earlier. Some examples are listed on the back of this page. Have the students devise skits to act out the situations printed on the cards. Then have the audience identify the emotions displayed by cast members.

Sample Situations

1. The engine in your dad's Ford tractor blows up while he is plowing his field.
2. You are raising turkeys to sell so you can buy Christmas presents for your family. The price of turkeys goes up, because the supermarkets predict a shortage before the holidays.
3. You are chosen to be in a video produced by the state forestry division.

Name _____

Face Your Feelings

How might you feel if . . .

Circle and color the faces that show your feelings.

. . . your barn cat runs away, and you can't find it.	
. . . your prize pig wins first place at the fair.	
. . . a tornado wipes out your pecan crop for the year.	
. . . your family is forced to sell the family farm.	
Write your own. _____	

Talk about it.

1. Do you have more than one feeling in each situation? Mark all the faces that show how you feel.
2. Do other members of your class feel just the same as you about some situation?
3. Think up a solution for the situations where you colored a sad face. Explain your solution.

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Ag in the Classroom

OFF TO WORK

SS 6

SUBJECT: Social Studies

GRADE: 2

CONCEPT: VI

COMMODITY: Beef

LEARNER OUTCOME

Grade Two: IV. A. 4. The student will describe the roles of workers who provide goods and services.

LEARNER OBJECTIVE

The student will become familiar with agricultural careers and how they touch our daily lives.

LESSON

A. Step-by-Step Instructions

1. Pass out the student worksheet. Discuss the different careers featured on the page, using the background material.
2. Have students draw lines connecting the job word to the picture.
3. Draw a line from the agricultural job to the simple job description.
4. Have students draw pictures of themselves doing agricultural jobs. Any home or farm choice will be acceptable.

B. Background

Agriculture touches our lives each day. Taking care of animals or grocery shopping are forms of agriculture. Planting a garden or making dinner has to do with agriculture also. There are many agricultural jobs. A ***rancher*** *raises beef swine, rabbits, poultry, or sheep until they are ready to go to market.*

A ***trucker*** *picks up the animals or birds at the ranch and takes them to market in his truck. The livestock is sold to a buyer at the market. The buyer pays the rancher, then the rancher pays the trucker for his services.*

The ***meat packer*** *buys the animals at the stockyard or directly from the rancher. Then he or she cuts up the meat. At the grocery store the meat cutter cuts the meat into smaller pieces and wraps it up into packages.*

The ***grocer*** *sells the meat to shoppers, who take it home and cook it for a meal.*

Source: OSU Cooperative Extension Service, Animal Sciences Dept.

C. Resources

Books

Civardi, Ann, *The Farmer*, EDC, 1986.

Collins, David R., *Pioneer Plowmaker: A Story About John Deere*, Carolrhoda, 1990.

Dineen, Jacqueline, *How People Live Farming*, Schoolhouse, 1990.

Easton, Patricia, *Stable Girl: Working for the Family*, Harcourt Brace, Jovanovich, 1991.

Greene, Carla, *I Can Be a Farmer*, Children's Press, 1991.

Hall, Donald, *The Ox Cart Man*, Viking, 1979.

Imershein, Betsy, *The Work People Do: Farmer*, Julian Messner, 1990.

D. Evaluation

Were the job words correctly matched to the pictures? Were the job words matched to the correct description? Does anyone in the class know a person with a job related to agriculture.

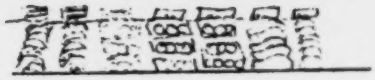
E. Related Activities

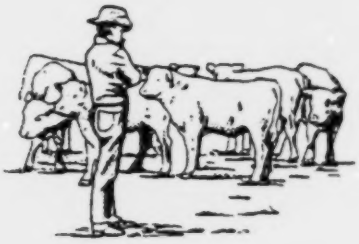
1. Have a career day in your class. Have each student dress for the career he or she would like to have in the future. Discuss choices. Talk about how each of the career choices might be connected with agriculture.
2. Invite someone to class who works at one of the jobs featured on the student worksheet. Ask for a brief description of a typical work day.
3. Ask students to invite their parents to talk about their jobs. Contact parents to set up times.

Name _____

Off to Work

These people have agricultural jobs. Draw a line from the word to the matching picture.



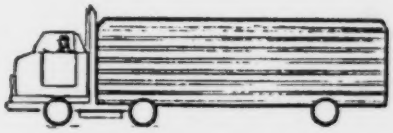


trucker

rancher

packer

grocer



Draw a line from the name to the description. Can you list two more people who have agricultural jobs?

Name	Job
rancher	hauls products to market
trucker	sells food to shoppers
packer	raises and cares for cattle
grocer	cuts and packages meat
_____	_____
_____	_____

Produced by Oklahoma State University Cooperative Extension Service
in cooperation wtih the Oklahoma Department of Agriculture, 1992

OKLAHOMA FORESTS

SS 7

SUBJECTS: Social Studies

GRADE: 2

CONCEPT: III

COMMODITY: Forestry

LEARNER OUTCOME

Grades One: I. Students will demonstrate a knowledge of the interrelationship among individuals and their environment.

LEARNER OBJECTIVE

The student will learn to interact with nature in an artistic, fun manner and will learn to view objects in a different way.

LESSON

A. Step-by-Step Instructions

1. As a class, have students explore a tree.
2. Hand out student worksheet A, and let students use colors and lines to express what they saw and felt on the tree.
3. Introduce the vocabulary word "texture" (a grainy, fibrous, woven or dimensional quality, as opposed to a uniformly flat, smooth aspect).
4. Lead students in a discussion of what they saw. Ask them to describe the tree's bark--its texture, color, smell, etc. Ask students to consider how the tree came to grow where it did. Compare the tree in question to other trees in the area.
5. Student worksheet B shows the locations of Oklahoma forests. Share the background information with students, and discuss the map.

B. Background

Different kinds of trees grow differently and have different kinds of bark and different kinds of leaves or needles. In the forest, trees that drop their leaves all at once are called ***hardwoods****. Trees that lose their needles a few at a time, like pine trees, are called* ***softwoods****, or evergreens. This can be confusing, because not all softwood trees have soft wood, and not all hardwood trees have hard wood.*

Oklahoma has both hardwood and softwood trees. Most of the state's forest land is hardwood and grows in the eastern part of the state. The ***central hardwood forest*** *starts in northeast Oklahoma and extends into Arkansas. Most of the trees are red oak and hickory trees. These trees are valuable for making things like furniture.*

The post oaks and blackjack oaks growing in the east central part of Oklahoma make up an area called the ***cross timbers****. These trees make good firewood.*

Pine trees and mixed hardwoods grow in the ***southern pine forest*** *in the southeast corner of our state.*

Pecan, walnut, cottonwood and willow are some of the trees that grow in the ***bottomland hardwoods*** *along the rivers and creeks throughout Oklahoma. These trees are also found in the* ***grasslands*** *of the western and north central parts of the state.*

Source: OSU Cooperative Extension Service, Forestry Dept.

C. Resources

Books

Kellogg, Steven, *Johnny Appleseed,* Morrow Junior Books, 1988.
Ryder, Joanne, *Hello Tree,* Lodestar Books, 1991.

Taylor, Mildred D., *Song of the Trees,* Bantam, 1988.

Additional Resources

"New York State Arbor Day," NY Agriculture in the Classroom, Cornell University, 111 Kennedy Hall, Ithaca, NY 14853 (eight-panel brochure for teacher reference, with suggestions for community involvement and environmental activities, 25 cents.)

"How a Tree Grows," NY Agriculture in the Classroom, Cornell University, 111 Kennedy Hall, Ithaca, NY 14853 (poster, $2.50).

D. Evaluation

Did students observe physical differences in the trees (size, bark color, bark texture, etc.)? Could students tell if the tree was alive or dead? Did students notice if the tree had smells? Did students wonder how long the tree had been there or how it got there?

E. Related Activities

1. ***Blow Art*** - You will need tempera paint, straws (cut in half), drops of water, small sponges and paper. Place 4-5 drops of tempera paint in a "puddle" an inch or so from the bottom of each student's paper. Show students how to hold the straw parallel to the paper and gently blow the paint upward. Add drops of water to the mixture if it doesn't blow easily. Tell the students to think about the tree they explored and what that tree looks like. Turn the paper to make branches. Later, let students use small sponges to lightly press on water color (or thinned-out tempera paint) to give the impression of leaves.
2. ***Seed Mosaic*** - You will need heavy cardboard, glue and several kinds of seeds. Draw a large outline of some shape your students can identify. Discuss the seeds, where they came from, etc., then let students glue the seeds in the outline. Pasta can be used instead of seed. In that case, discuss how pasta is made from other Oklahoma agricultural crops, such as soybeans and wheat.
3. ***Fading Beauty*** - You will need construction paper or some other kind of paper that fades easily, (Don't use white, black or yellow.) Pick up leaves, sticks, berries or anything else you find outside that has a definite shape. Arrange the objects in an interesting design on the paper and place the paper in the sun. Use a piece of glass to hold down the arrangement. With ordinary construction paper, a few hours of good sunlight should produce a good fading effect on the paper.
4. ***Build a Tree*** - Draw the outline of a tree (4-6 feet high) on butcher paper. Post the tree in your classroom or in the hallway. Have students bring natural materials that can be found on a tree (chunks of bark, nut, leaves, twigs). Using a hot glue gun, fill in your outline, placing the materials where they would be found on a tree. Encourage students to find the unusual--birds' nests, knot holes, etc. This activity could be an ongoing project or a good Arbor Day activity.

Name _____

Oklahoma Forests A

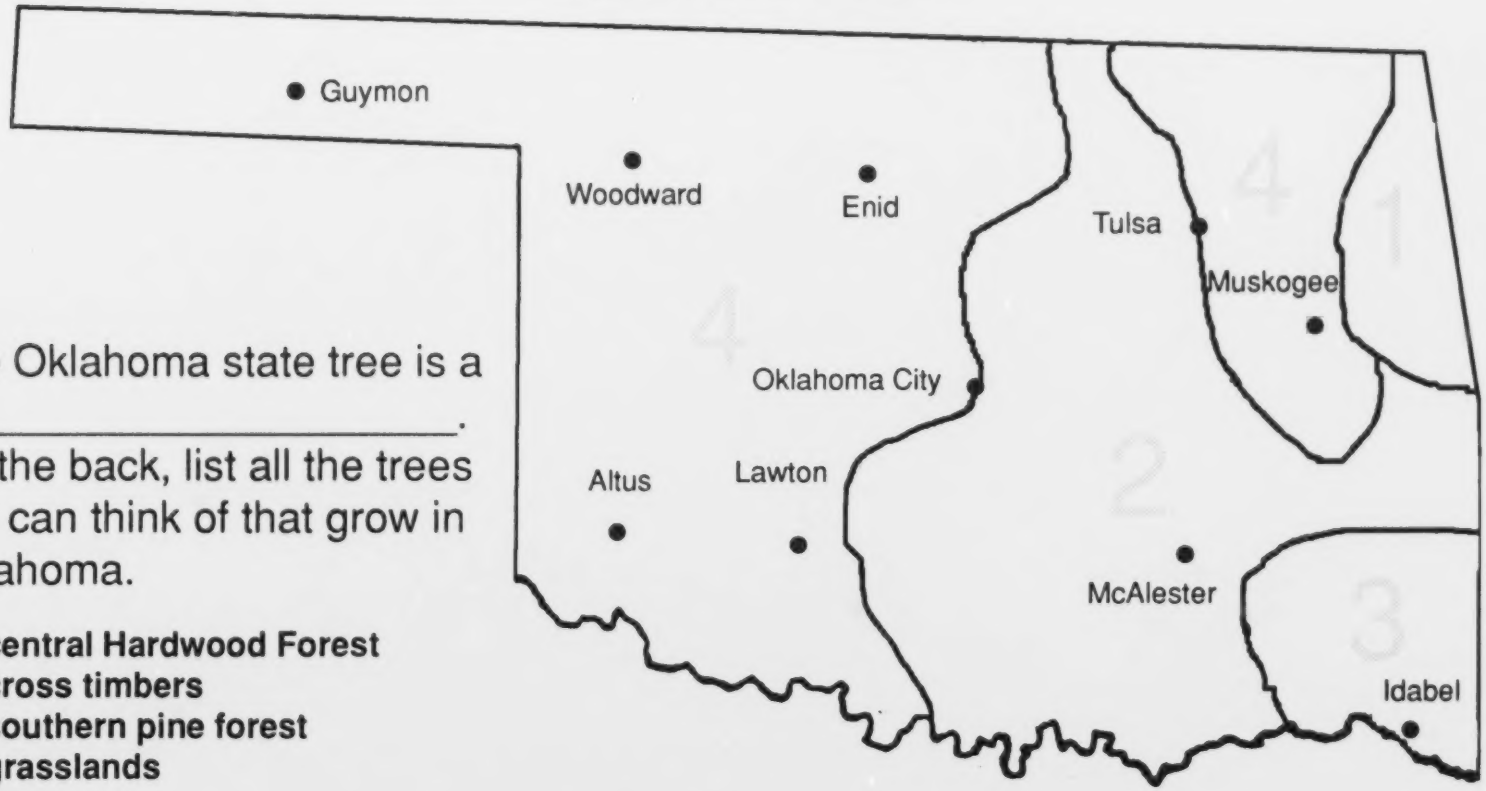
Look at a tree near your playground. Look at the texture, shape and color. Touch it; smell it; listen to it. When you come back inside, draw what you saw.

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name_____

Oklahoma Forests B

Oklahoma Forests



The Oklahoma state tree is a _____.

On the back, list all the trees you can think of that grow in Oklahoma.

1 = central Hardwood Forest
2 = cross timbers
3 = southern pine forest
4 = grasslands

Produced by Oklahoma State University Cooperative Extension Service
in cooperation wtih the Oklahoma Department of Agriculture, 1992

POP AROUND THE WORLD SS 8

SUBJECT: Social Studies (map) **GRADE:** 2

CONCEPT: III **COMMODITY:** Horticulture

LEARNER OUTCOME

Grade Two: III. B. 2. The student will locate places on a map and globe.

LEARNER OBJECTIVE

The student will use a basic world map to identify the regions from which popcorn originated.

LESSON

A. Step-by-Step Instructions

1. Share the background materials with your class. Talk about the countries where popcorn was first grown.
2. As a class, have students locate the areas on a map.
3. Have students color the world map and glue unpopped kernels of popcorn onto the countries from which popcorn originated.

B. Background

Americans munch down over seven billion quarts of popcorn every year. Popcorn is good for you. It is low in fat and calories and has no sugar. It has more nutrients than most other snacks.

Popcorn can grow in parts of the world where other corns cannot. People in China, Mexico, Sumatra and India have grown popcorn since before Columbus made his voyage to America.

The Iroquois Indians brought popcorn to the first Thanksgiving. They had a legend that each kernel of popcorn had a demon inside. The demon would remain quiet until his house was heated. Then he would get so mad he would blow his top. When the popcorn exploded, the demon would disappear with the steam. Since the time of the first Thanksgiving, there is a tradition of bringing popcorn as a token of good will during peace negotiations.

Source: OSU Cooperative Extension Service, Horticulture Department

C. Resources

Books

Aliki, *Corn is Maize,* Harper Row, 1991.
de Paola, Tomie, *The Popcorn Book,* Scholastic, 1978.
Jennings, Terry, *Seeds,* Franklin Watts, 1990.
Kellogg, Cynthia, *Corn: What It Is, What It Does,* Greenwillow, 1989.

Additional Resources

"Color It Corn," Nebraska Corn Board, 301 Centennial Mall South, P. O. Box 95107, Lincoln, NE 68509 (23-page coloring book for grades 1-4, one free copy, with permission to photocopy).

D. Evaluation

Students should have glued unpopped kernel of popcorn to the following countries: Mexico; China; Sumatra; India; the United States of America.

E. Related Activities

1. Brainstorm with your students about items made from corn. Have students write down the names of items found in their kitchens that contain some type of

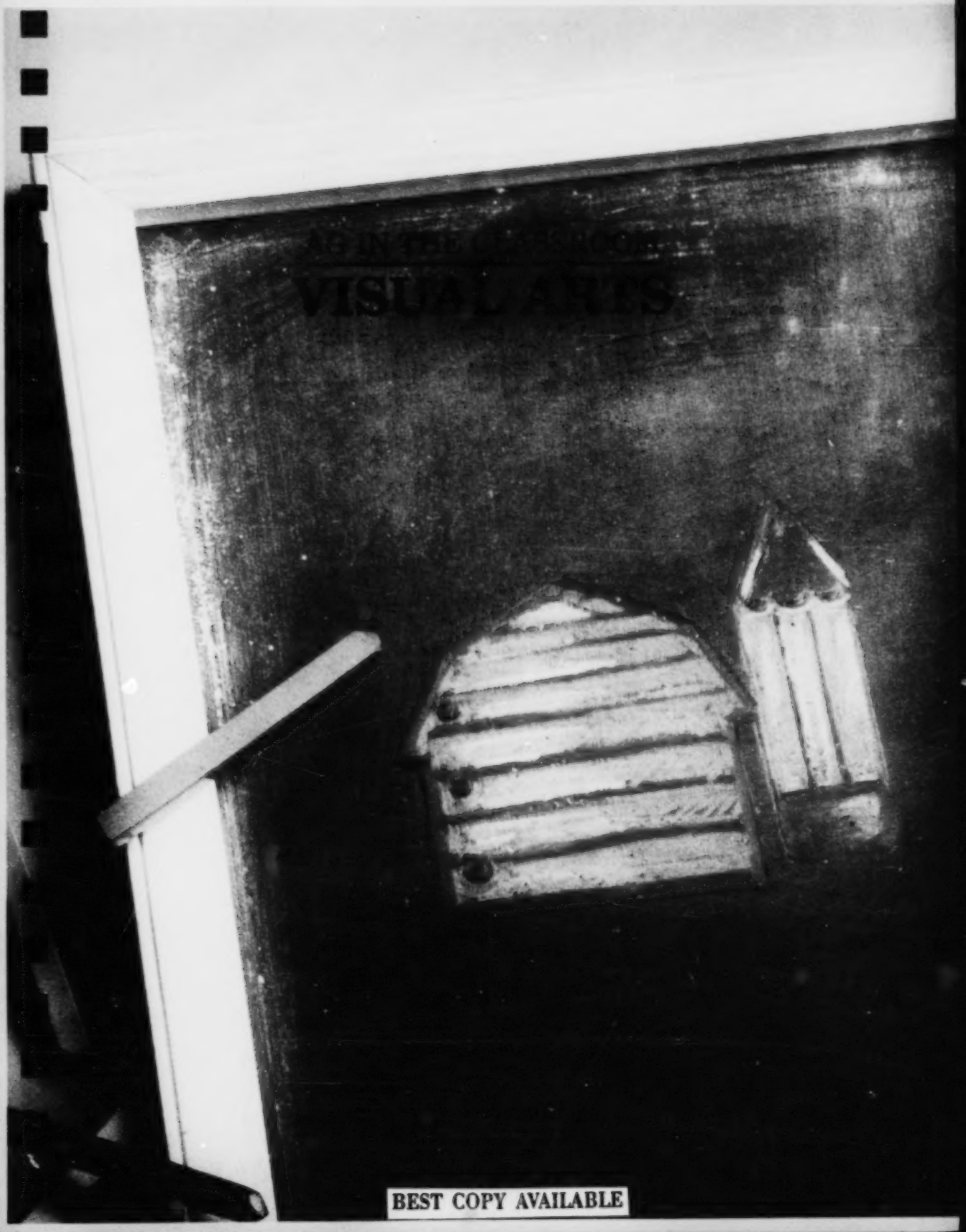
corn product.
2. Have students string unsalted and unbuttered popcorn and place the strings on trees around the school yard for birds and squirrels to feast on.
3. Have students design their own "popcorn demons" and decorate them with plain, popped corn.

Name

Pop Around the World

Place a kernel of popcorn on each of the continents where popcorn was first grown.

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992



BEST COPY AVAILABLE

A PURPLE COW

VA 1

SUBJECT: Visual Arts

GRADES: K-2

CONCEPT: III

COMMODITY: Miscellaneous

LEARNER OUTCOME: Grades One through Three: I. F. The student will learn to respond by talking about art in his or her own words, thus expressing the results of personal observations.

LEARNER OBJECTIVE

The student will learn to identify colors in nature and to observe objects under varying light conditions.

LESSON

A. Step-by-Step Instructions

1. Look at examples of artists' paintings, and have students identify the colors. Discuss colors in nature.
2. Read the poem, "The Purple Cow," by Gelett Burgess. Talk about why colors look different under different kinds of light.

The Purple Cow

I never saw a Purple Cow,
I never hope to see one;
But I can tell you, anyhow,
I'd rather see than be one.

3. Cut out colored magazine photographs of fruits, vegetables, etc., and paste them onto a color wheel. Some of the following fruits and vegetables may be used:

Red - apples, beets	Green - lettuce, peppers
Orange - oranges, carrots	Blue - grapes, blueberries
Yellow - lemons, squash	Purple - eggplant, red cabbage

B. Background

You won't find a purple cow on an Oklahoma farm, but you will find other things in many shades of purple. Much of the hay that cows eat is made from alfalfa and clover which have purple flowers in the springtime. Purple vetch is a plant that is common in Oklahoma fields. Plums, grapes and eggplant are purple-colored fruits that can be found on some Oklahoma farms. And there is a variety of black-eyed peas that has purple hulls.

Cows are black, white, black and white, brown, red and tan.

Source: OSU Division of Agricultural Sciences and Natural Resources

C. Resources

Books

Ardley, Neil, *The Science Book of Color*, Gulliver, 1991.
Burgess, Gelett, "I Never Saw a Purple Cow," *A Nonsense Anthology*, Dover, 1958.
Day, Jenifer W., *What is a Fruit?* Golden/Western, 1976.
Hollingsworth, Patricia, and Stephen F. Hollingsworth, *Smart Art: Learning to Classify and Critique Art*, Zephyr Press, 1989.
Kurelek, William, *Prairie Boy's Summer*, Houghton-Mifflin, 1975.
Mabey, Richard, *Oak and Company*, Greenwillow, 1983.
Venezia, Mike, *Da Vinci*, Children's Press, 1989.
Venezia, Mike, *Picasso*, Children's Press, 1988.
Venezia, Mike, *Rembrandt*, Children's Press, 1988.
Venezia, Mike, *Van Gogh*, Children's Press, 1988.

D. Evaluation

Can the student identify the color of each fruit and vegetable as you show it to him or her?

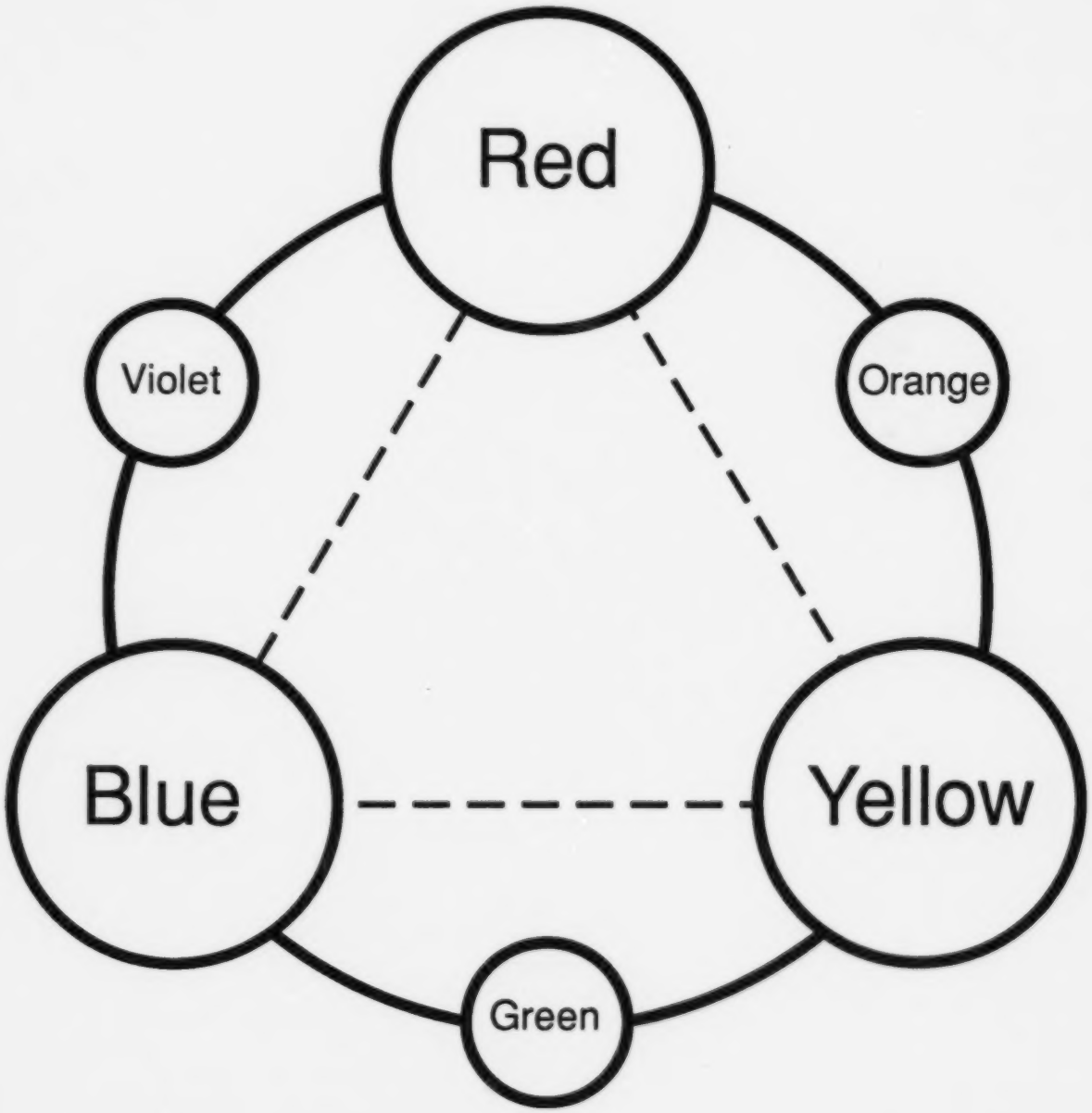
E. Related Activities

1. Have students draw pictures showing how they feel when they think of their favorite colors. Have students glue small samples of their favorite colors onto the backs of their pictures. Then have students list all the foods they can think of that are the same colors as their favorite colors.
2. Make a ***Purple Cow*** for each student to drink. Put two scoops of vanilla ice cream into a glass, and pour any brand of grape drink over it.
3. Discuss color as a natural camouflage for animals. Have students think of examples (snowshoe rabbit, white-tailed deer). If possible, provide pictures from nature magazines. Have students draw pictures, using only one color.

Name _____

A Purple Cow

Cut out colored pictures of fruits and vegetables from magazines. Paste the pictures in the correct circles on the color wheel.



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

LINES IN NATURE

VA 2

SUBJECT: Visual Arts

GRADES: K-2

CONCEPT: III

COMMODITY: Miscellaneous

LEARNER OUTCOME

Grades One through Three: I. B. The student will learn to identify the qualities of line, color, form, shape, texture and space.

LEARNER OBJECTIVE

The student will learn to identify various lines in nature (straight, curved, diagonal, angular, thick, thin).

LESSON

A. Step-by-Step Instructions

1. Show students the art prints suggested in the background materials, or find other prints that depict nature scenes.
2. Have students look for the lines in the artwork, and ask them to discuss what they see.
3. Hand out student worksheets, and discuss the directions orally with your students.

B. Background

Suggested Art Prints:

"Still Music," by Ben Shahn
"Birds and Cattle," by Harry Vital
"The Large Blue Horses," by Franz Marc

Everywhere you look in nature you see lines. Look for the lines in plowed fields, rows of vegetables, spider webs and the branches of trees in wintertime.

C. Resources

Books

Fowler, Allen, *It Could Still be a Tree,* Children's Press, 1990.
Frank, Josette (ed.), *Snow Toward Evening,* Dial Books, 1990.
Hajdusiewicz, Babs Bell, *Rico's Shadow,* Steppingstone Series, Steck-Vaughn, 1991.
Venezia, Mike, *DaVinci,* Children's Press, 1989.
Venezia, Mike, *Picasso,* Children's Press, 1988.
Venezia, Mike, *Rembrandt,* Children's Press, 1988.
Venezia, Mike, *Van Gogh,* Children's Press, 1988.

D. Evaluation

The student should be able to point out different types of lines in the art work.

E. Related Activities

1. Have students moisten string in tempera paint and lay it in random shapes on construction paper. After the string has dried, have students color the areas outlined by the string with crayons or felt tip markers. With a black marker, add facial features to the "wild animals" they have created.
2. Fold light-colored pieces of paper in half, like a book. Dip pieces of string in tempera paint, and have students slowly wind the string in random shapes on one half of the inside of the "book." Close the book, and press down lightly on the paint string. Slowly pull the string out. When it is completely out, open the book. For more dramatic effect, use additional strings and several different colors. This activity will require a large amount of space and paint shirts for the participants.

Name _____

Lines in Nature

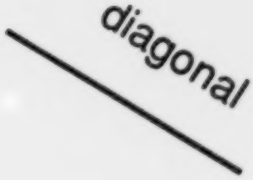
Draw a picture of a farm or ranch. Use these lines.

straight

thin

thick

curved



angular

Draw something that is both inside and outside the border line.

Produced by Oklahoma State University Cooperative Extension Service
in cooperation wtih the Oklahoma Department of Agriculture, 1992

POTATO PRINT

VA 3

SUBJECT: Visual Arts

GRADES: K-2

CONCEPT: III

COMMODITY: Horticulture

LEARNER OUTCOME

Grades One through Three: IV. The student will learn to engage in creative drawing, painting, designing, sculpting, constructing, weaving and print making.

LEARNER OBJECTIVE

The student will experience print making, using a natural agricultural product, the potato.

LESSON

A. Step-by-Step Instructions (No student worksheet is needed for this lesson.)

1. Cut potatoes in half. Instruct students to create simple designs that can be carved into the "meat" of the potato (star, heart, circle).
2. Help students carve the designs in the potatoes, using butter knives or kitchen table knives.
3. Mix water-based paints in aluminum pie pans or other shallow dishes.
4. Dip potato surface with cut-out design into paint. Press to surface of paper.
5. Carefully lift potato, leaving the print on the paper.
6. Discuss the question, "What is a print?" with older students.

B. Background

Potatoes produce more pounds of protein per acre than corn, rice, wheat or oats. They are as perfect as any one food. The potato is packed with nutrients, low in fat, generous in bulk and efficiently packaged in its own skin. It can be prepared in many different ways and is delicious.

The potato is not a root but a storage area, which is part of the plant's underground stem. The roots collect more water and food than the growing plant can use at one time. The plant stores the excess food in oval packages, called tubers (the potato).

When the greenery starts to wither and turn brown, the potatoes are ready for harvest.

Source: OSU Cooperative Extension Service, Horticulture Dept.

C. Resources

Books

Bourgeois, Paulette, *The Amazing Potato Book,* Addison Wesley, 1991.
Ehlert, Lois, *Growing Vegetable Soup,* Harcourt, Brace, Jovanovich, 1987.
McDonald, Megan, *The Potato Man,* Orchard, 1991.
Selsam, Millicent E., *More Potatoes!,* Harper & Row, 1972
Watts, Barrie, *Potato,* Silver-Burdett, 1987.

D. Evaluation

Did the student enjoy making the prints? Do they understand what a print is?

E. Related Activities

1. Create wrapping paper with prints. Sell at parent meeting or to school personnel.
2. Create sets of note cards. Tie them together with ribbons and have students give them as gifts.

3. Introduce the idea of an assembly line. Have various prints stamped at different stages, along with delivery people that move the sheet along during the process. Discuss why it was quicker to work in this fashion, rather than have one person do all the jobs.

SAND AND SUNFLOWERS VA 4

SUBJECT: Visual Arts GRADES: K-2

CONCEPT: III COMMODITY: Horticulture

LEARNER OUTCOME
Grades One through Three: I. G. The student will enjoy and respond to a variety of art media and art forms.

LEARNER OBJECTIVE
The student will identify a sunflower and the seed it produces.

LESSON (No student worksheet is needed for this lesson.)

A. Step-by-Step Instructions

1. Show students pictures of sunflowers. If possible, bring a real sunflower to class. Bring sunflower seeds for students to eat.
2. Have students design sunflowers, using crayons on a square piece of sandpaper. Then have students color the sunflower by bearing down heavily with crayons on the sandpaper.
3. Place the sandpaper face down on a plain sheet of white paper. Iron over the back of the sandpaper. Let it cool, then pull the sheets apart slowly. You will have a beautiful textured print.

B. Background

Most of the sunflowers grown in Oklahoma are used as garden flowers or as birdseed. Birds love to eat sunflower seeds. They cause problems for sunflower growers by eating the seeds while the plants are still flowering. Blackbirds are the peskiest.

Sunflowers grow to be very tall, as tall or taller than most adults. Some can grow to be as tall as 15 feet. The face of the sunflower always turns toward the sun when it is growing. Usually the heads will start to droop by the end of the growing season. That's because the hundreds of seeds growing in the flower get heavier as they develop and cause the head to fall over.

Sunflower seeds taste good and are also a good source of potassium and protein. They are fast becoming the favorite snack of baseball players and their fans. During the 1980 baseball season, fans of the Baltimore Orioles professional baseball team ate nearly 3,000 packets of sunflower seeds.

Source: OSU Cooperative Extension Service, Horticulture Dept.

C. Resources

Books

Barden, Helen, *Busy Little Gardener,* Jelly Bean, 1990.
Bond, Shirley, and Janet Cook, *Where Food Comes From,* EDC, 1989.
Gibson, R., *Kitchen Fun,* EDC, 1991.
Sabin, Louis, *Plants, Seeds and Flowers,* Troll Associates, 1985.

Additional Resources

"Bud's World - A Plant's View," New York Ag in the Classroom, Cornell University, 111 Kennedy Hall, Ithaca, NY 14853 (35-page booklet on the complexity of agriculture and the importance of science).

D. Evaluation

Were students able to identify a sunflower and its seeds? Did they enjoy making

the prints?

E. Related Activities

1. Bring a cupful of purchased birdseed. Have students identify the sunflower seed in the mixture.
2. Cut letters of the alphabet out of sandpaper. Glue the letters onto a tag board, and set up a writing center. Have students use old crayons to make rubbings of their names, spelling words, etc.
3. Plant sunflower seeds in small containers in your classroom. When they have grown at least two sets of leaves, transplant them outside, somewhere on the school grounds. Observe their growth and development at different times of the day.
4. Roast your own sunflower seeds. Place a single layer of raw, dehulled kernels in a shallow pan. Place the pan in a 300-degree oven for 30 to 40 minutes. After roasting, stir in about one teaspoonful of melted butter or margarine. Stir until coated. Remove any excess fat by draining on a paper towel. Salt to taste. Store the uneaten portion in an airtight container.

WHICH ONE IS DIFFERENT? VA 5

SUBJECT: Visual Arts GRADE: K

CONCEPT: I COMMODITY: Miscellaneous

LEARNER OUTCOME
Kindergarten. Creative Skills. 4. The student will develop visual awareness.

LEARNER OBJECTIVE
The student will distinguish which of three objects is different and mark it with an "X."

LESSON

A. Step-by-Step Instructions
1. In a group setting, present objects that are alike (two animal books, for example.) Then introduce an object that is different from the others (an encyclopedia). Ask students how the objects are alike and how they are different. Present several groups of objects to make sure students understand the concept.
2. Hand out student worksheets and discuss the directions. Make sure the students understand they are to mark the object that is *different* with an "X." Then have students color the objects that are the same.

B. Background
All six of the worksheets feature pictures of things found or produced on Oklahoma farms.

C. Resources

Books

Carle, Eric, *The Grouchy Ladybug*, Harper Trophy, 1977.
Flack, Marjorie, *The Story about Ping*, Scholastic, 1961.
Koscielniak, Bryce, *Hector and Prudence*, Alfred A. Knopf, 1990.
Pellowski, Michael J., *Copycat Dog*, Troll Associates, 1986.
Redhead, Janet Slater, *The Turkeygobbling Frog Show*, Steck-Vaughn, 1991.
Stevens, Janet (illus.), *It's Perfectly True!* Holiday House, 1988 (adapted from Hans Christian Andersen.

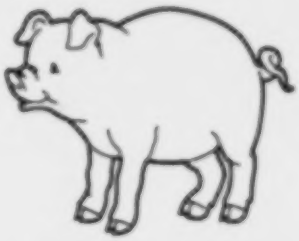
D. Evaluation
A teacher-prepared answer key would be best for scoring the student pages.

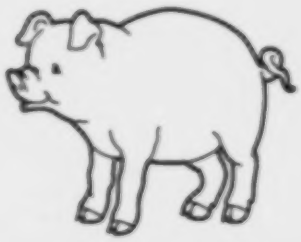
E. Related Activities
Each day place a set of objects in a place where all students can see them. Challenge the class to figure out which object is different. At first make the problem a simple one. As students become more aware, make the activity more difficult. Have younger students simply say which object is different and why. Have older students write their answers on paper.

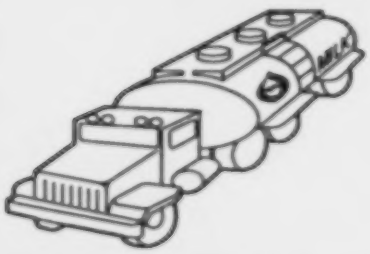
Name _____

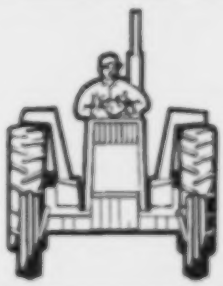
Which One is Different? A

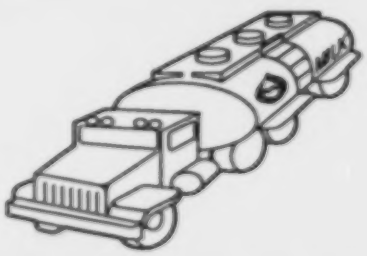
Put an X on the one that is different.

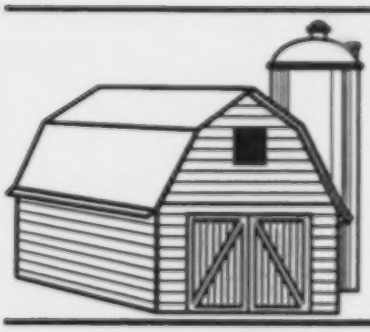


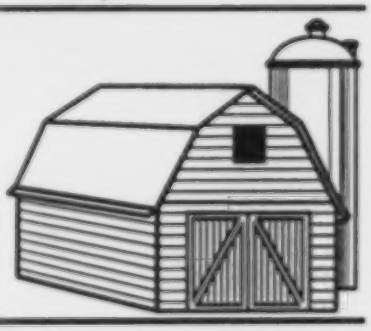












Color the ones that are the same.

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Which One is Different? B

Put an X on the one that is different.

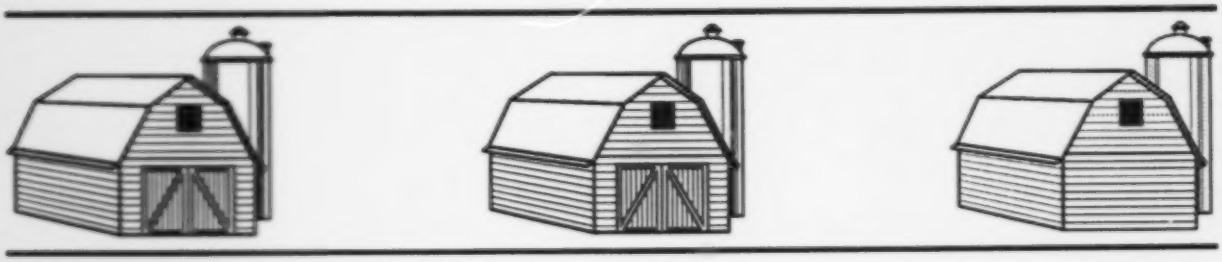
Color the ones that are the same.

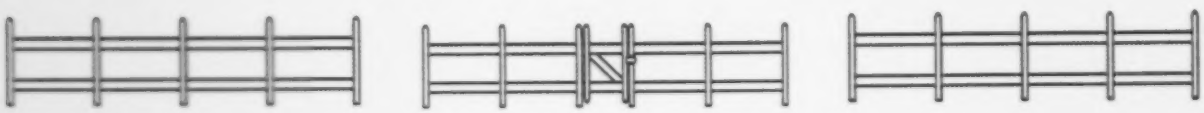
Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Which One is Different? C

Put an X on the one that is different.





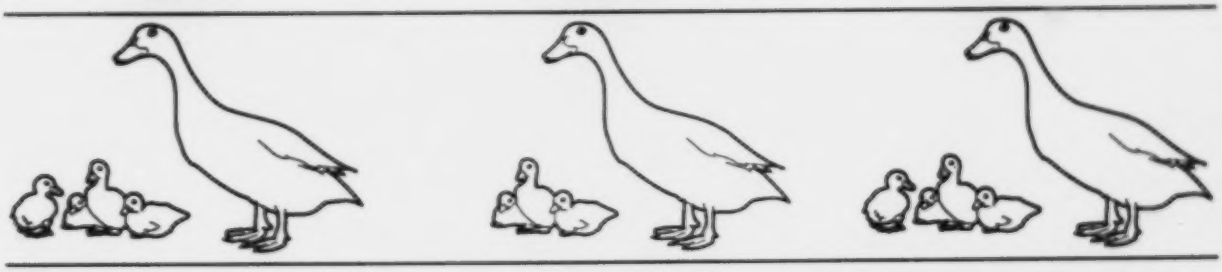
Color the ones that are the same.

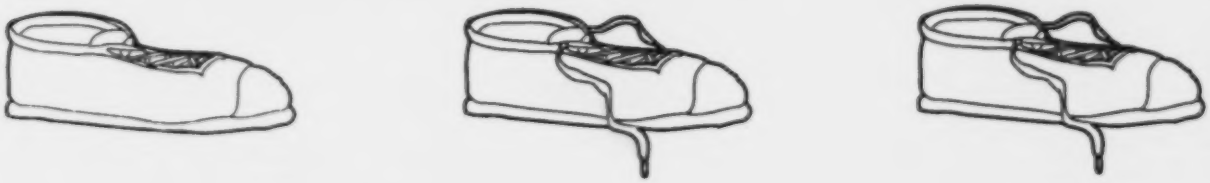
Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Which One is Different? D

Put an X on the one that is different?





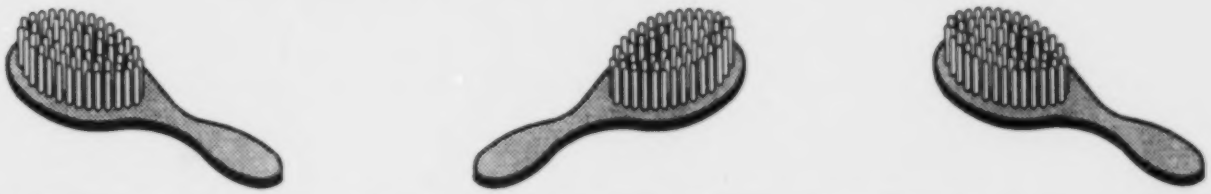
Circle the ones that are the same.

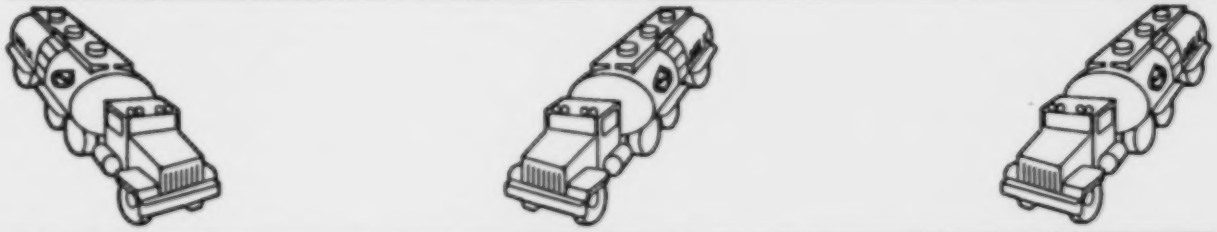
Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

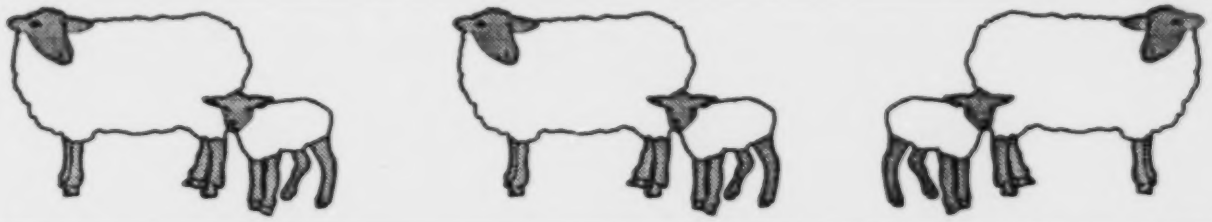
Name _____

Which One is Different? E

Put an X on the one that is different.







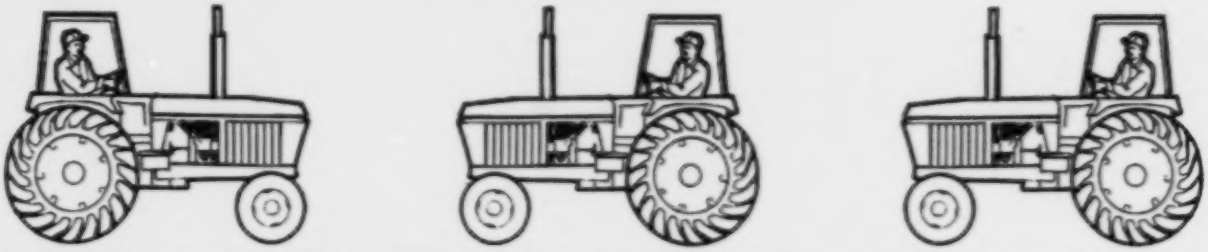
Color the ones that are the same.

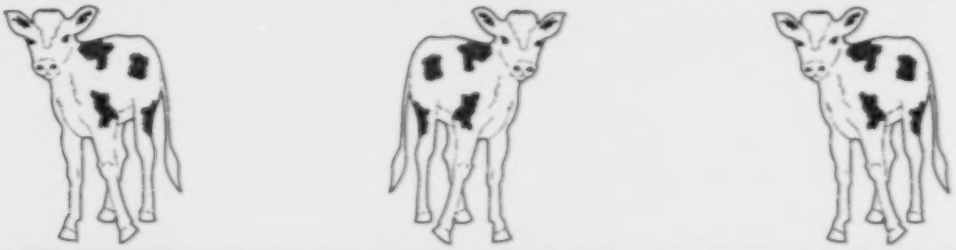
Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

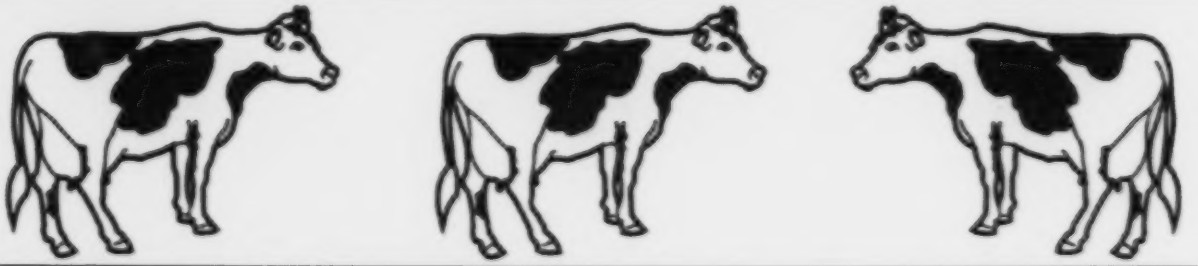
Name _____

Which One is Different? F

Put an X on the one that is different.







Color the ones that are the same.

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Ag in the Classroom

WONDERS OF WOOL

VA 6

SUBJECT: Visual Arts

GRADES: K-1

CONCEPT: I

COMMODITY: Wool

LEARNER OUTCOME

Grades One through Three: I. G. The student will learn to enjoy and respond to a variety of art media and art forms.

LEARNER OBJECTIVE

The students will be introduced to wool production in Oklahoma through a visual activity.

LESSON

A. Step-by-Step Instructions

1. Share the background information.
2. Provide each student with a copy of the activity sheet.

B. Background

Wool comes from sheep. For thousands of years, people have been spinning wool into yarn. The sheep rancher gets the wool from the sheep by shearing it. Then he sells the wool to people who spin it into yarn and weave it or knit it into cloth.

Some breeds of sheep are grown mostly for their wool. Others are grown mostly for their meat. And some breeds of sheep are grown both for their wool and for their meat.

OSU Cooperative Extension Service, Animal Science Dept.

C. Resources

Books

Demi, *Fleecy Lamb,* Putnam, 1987.
Dixon, Annabelle, *Wool,* Thread Series, Garrett Educational Corp., 1990.
Lewis, Kim, *Emma's Lamb,* Macmillan, 1991.
Perrault, Charles, *Sleeping Beauty and The Soldier and the Six Giants,* Upside Down Books, EDC, 1989.
Shaw, Nancy, *Sheep in a Jeep,* Houghton-Mifflin, 1986.
Shaw, Nancy, *Sheep in a Shop,* Houghton-Mifflin, 1991.

D. Evaluation

Were the students able to complete the maze?

E. Related Activities

1. Ask a sheep producer in your area to bring a lamb to your school.
2. Introduce the following vocabulary words:

spinning - the operation or business of making fibrous materials into yarn or thread.

spinning wheel - A hand- or foot-driven machine for spinning yarn or thread, in which a wheel drives a single spindle.

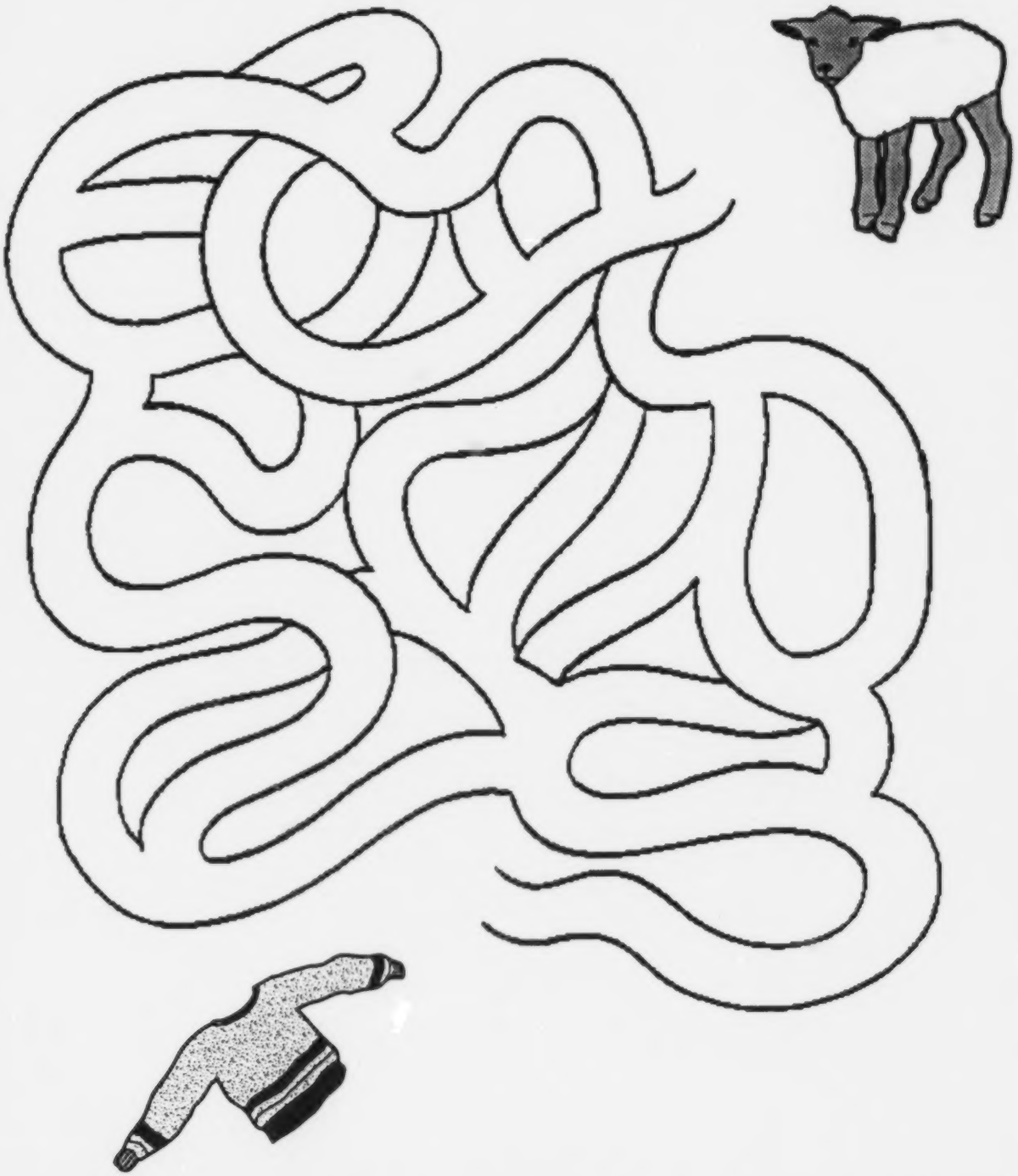
Invite a wool spinner to bring samples to your classroom to show students the difference between fine and coarse wool.

3. Many fairy tales mention spinning or spinning wheels. Some examples are "Sleeping Beauty" and "Rumplestiltskin." Share stories and pictures with students to help them understand the concept of spinning.
4. Purchase and prepare some lamb meat, and let your students sample it.

Name _____

The Wonders of Wool

Can you get the wool from the lamb to the sweater?



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

A TALL TIMBER TALE

VA 7

SUBJECT: Visual Arts

GRADES: K-1

CONCEPT: III

COMMODITY: Forestry

LEARNER OUTCOME

Kindergarten: Creative Skills. 4. The student will develop visual awareness.

LEARNER OBJECTIVE

The student will experience textures in art.

LESSON (No student worksheet is needed for this lesson.)

A. Step-by-Step Instructions

1. Introduce the word and concept "texture" (the representation of the structure of a surface, as distinct from color or form). Provide a variety of textures for students to feel (cotton balls, lemon, rock, etc.)
2. Provide each student with a sheet of paper and a piece of chalk or unwrapped crayon.
3. If possible, take your class outdoors and demonstrate how to make a tree rubbing by placing the paper over the bark of a tree, then rubbing over it with the chalk or crayon. Have students compare the rubbings from several different kinds of trees. What is different about the way they look and the way they feel? Are there any distinguishing marks on the bark, e.g., scars or knotholes?
4. Have students express their own definitions of "texture," either orally or in written form.

B. Background

Trees are important to us. Trees provide oxygen for humans and animals to breathe, and they take in the carbon dioxide that animals breathe out. Burning gasoline, coal and even wood also puts carbon dioxide into the air. Carbon dioxide is a dangerous gas for people and animals to breathe in. Without trees to absorb them, we would be overcome by these dangerous gases.

Trees provide shade around homes and buildings to keep them cooler during the hot summer months. They are important to farmers, because they help protect their fields from winds which can dry out the crops or even blow the topsoil away. Many farmers plant rows of trees along one side of their fields. This is called a ***windbreak****.*

Trees provide homes to many animals. Birds build nests, and squirrels make homes in the upper branches or in hollowed-out holes. Trees furnish squirrels with most of their food supply. Even cats need trees to scratch and help sharpen their claws. They also use them as a safe place to run when they are being chased by an enemy.

Our homes and many of the things in them are made from trees. Doors, chairs and tables are things made of wood that are easy to identify. But you may not know that some ceiling tiles, insulation, plastic and medicines are also made from wood fiber. Each year the average American uses the wood and pulp from one tree 100 feet tall and 18 inches across.

Source: OSU Cooperative Extension Service, Forestry Department
Oklahoma Department of Agriculture

C. Resources

Books

Arvetis, Chris, and Carole Palmer, *Why Do Leaves Change Color?* Rand-McNally, 1986.
Brandt, Keith, *Discovering Trees,* Troll Associates, 1982.
Kellogg, Steven, *Johnny Appleseed,* Morrow Junior Books, 1988.
Ryder, Joanne, *Hello, Tree,* Lodestar, 1991.

Additional Resources

"How a Tree Grows," New York Ag in the Classroom, Cornell University, 111 Kennedy Hall, Ithaca, NY 14853 (poster, $2.50).
"New York State Arbor Day," New York Ag in the Classroom, Cornell University, 111 Kennedy Hall, Ithaca, NY 14853 (eight-panel brochure for teacher reference, with suggestions for community involvement and environmental activities, 25 cents).
"Project Learning Tree," The American Forest Council, 1250 Connecticut Ave. NW, Washington, D.C.

D. Evaluation

As you discussed the tree rubbings, did students recognize there are various degrees of roughness?

E. Related Activities

1. Make ***leaf rubbings*** by substituting leaves for bark in step 3 of the lesson. Have students cut out the leaf rubbings, and hang them in the classroom.
2. Have students draw trees with bare branches, using a brown crayon or brown paint. Provide small sponge squares and paints in a variety of fall colors. After the students have drawn the bare tree branches, have them dab fall "leaves" on them, using several different colors of paint.
3. Plant a tree on your school ground. Find a local nursery or garden shop willing to donate a tree, or have your class raise money to buy one. Get an adult to dig the hole ahead of time, and have your class plant the tree and care for it throughout the school year.

AG PUZZLES

VA 8

SUBJECT: Visual Arts

GRADES: K-1

CONCEPT: III

COMMODITY: Miscellaneous

LEARNER OUTCOME

Grades One through Three: I. G. The student will enjoy and respond to a variety of art media and art forms.

LEARNER OBJECTIVE

The student will correctly place the farm puzzle pieces together to form an object that can be found on many Oklahoma farms.

LESSON

A. Step-by-Step Instructions

1. Hand out the student worksheets. Read and discuss the sentences at the top of the worksheet. Challenge students to answer the question at the bottom of the page.
2. Instruct students to cut and lay out the puzzle pieces to form a picture.
3. Have students glue the puzzle pieces to the page, then color the picture that was formed.

B. Background

Three ag puzzles are cut into four squares. This will help the students understand the puzzle idea. The first three are simple farm drawings. The second set of three ag puzzles will be more challenging. This set is divided into six pieces. The pictures featured in this set are a little more detailed.

C. Resources

Books

Amery, Heather, *What's Happening? On the Farm,* EDC, 1984.
Carle, Eric, *The Very Hungry Caterpillar,* Harper Trophy, 1985.
Cartwright, Stephen, *Apple Tree Farm,* EDC, 1991 (press-out model).
Dixon, Annabelle, *Wool,* Thread Series, Garrett Educational Corp., 1990.
McFarland, Cynthia, *Cows in the Parlor,* Atheneum, 1990.
Stephen, R. J., *Farm Machinery,* Franklin Watts, 1986.
Watts, Barrie, *Butterfly and Caterpillar,* Silver-Burdett, 1987.

D. Evaluation

Were the puzzle pages put together correctly? Did the students enjoy the activity?

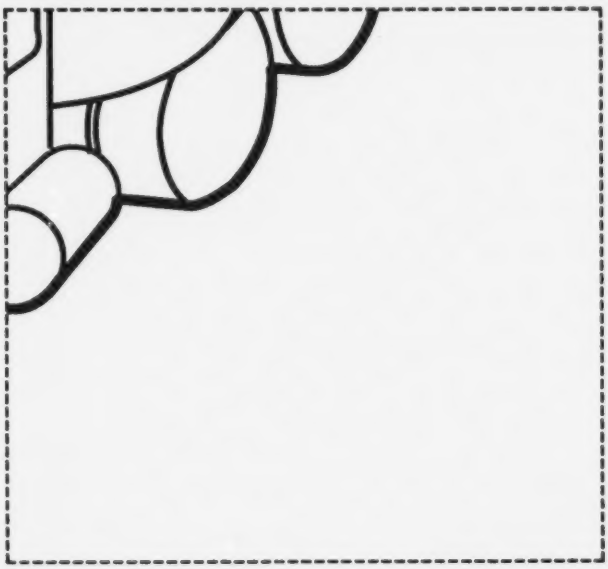
E. Related Activities

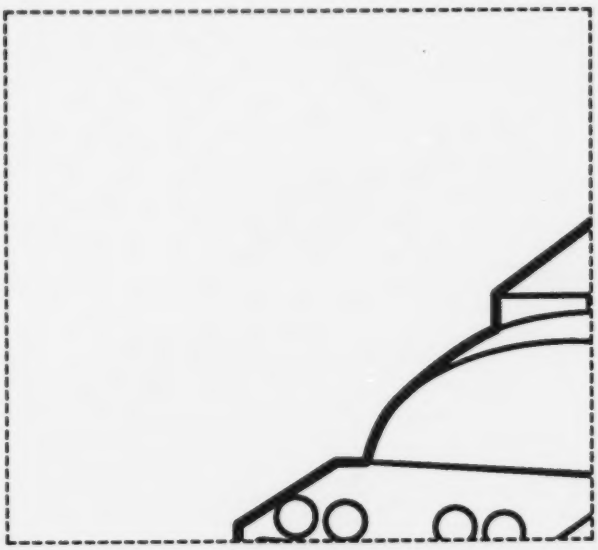
Color and laminate your own farm puzzles, and let students work on them during free time or as a learning center activity.

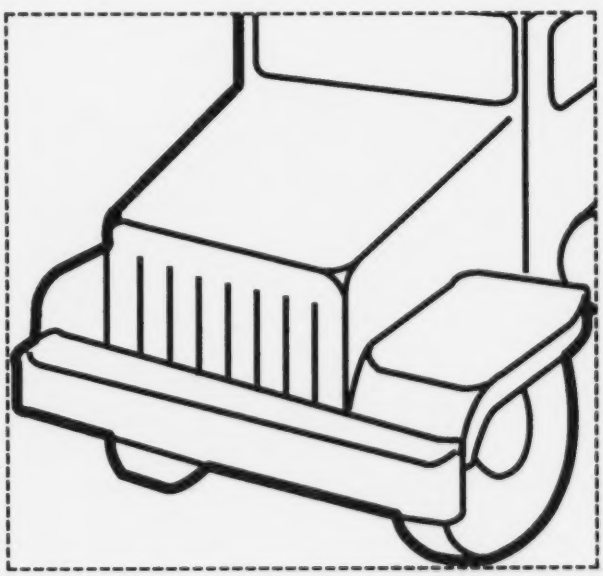
Name _____

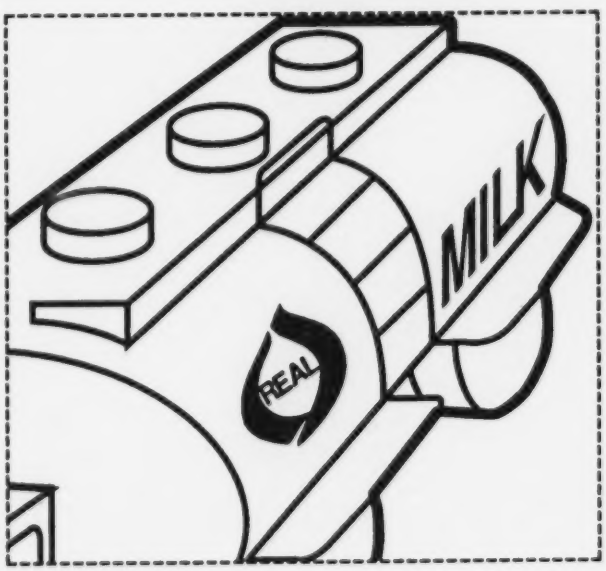
Ag Puzzle A

How does milk get from the dairy farm to the processing plant? Cut out the puzzle pieces. Glue them in the right order to make a picture. Color the picture.









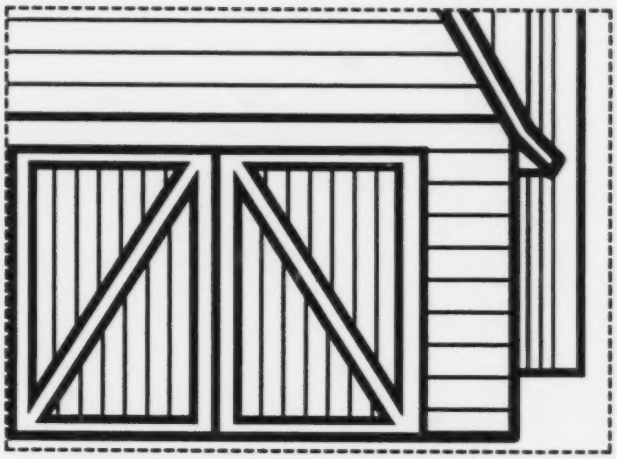
This is a milk _____

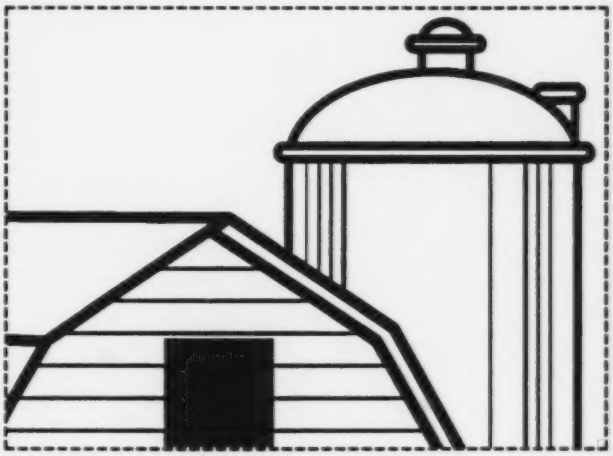
Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

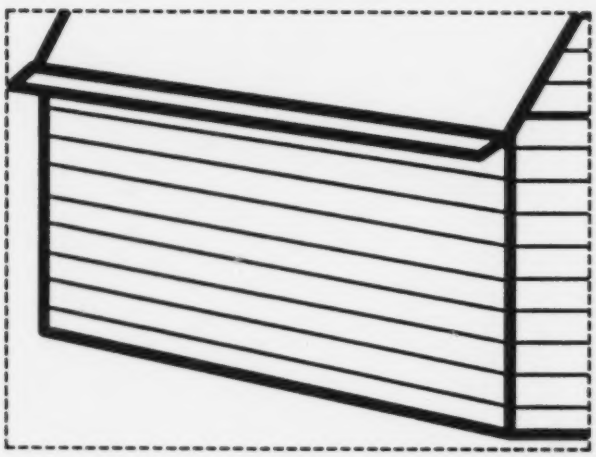
Name _____

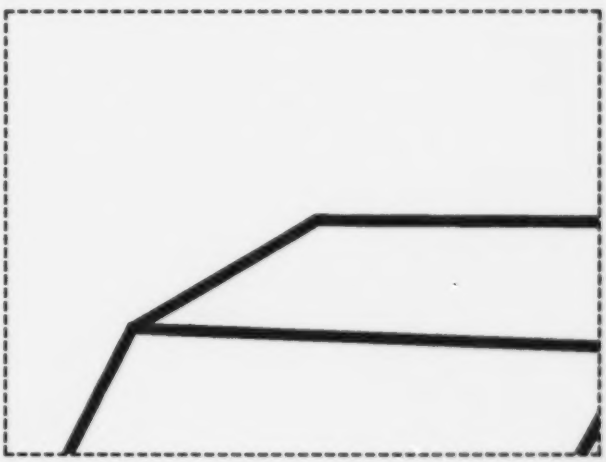
Ag Puzzle B

Where do farmers keep animals and the feed?









This is a _____

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Ag Puzzle C

Who helps the farmer keep the herds together?

This is a herd _____.

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Ag Puzzle D

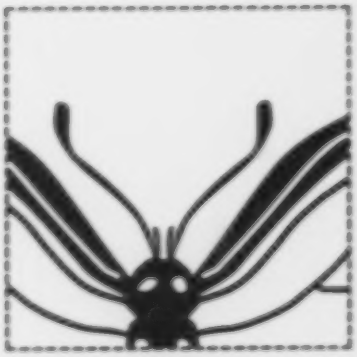
Some clothes people wear in the winter are made of wool. Wool is soft and warm. What Oklahoma animal gives us wool? _____

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Ag Puzzle E

*This insect is called a Monarch. It has large, brightly colored wings. It eats milkweed that sometimes grows on farm land. What color are its wings?*_____

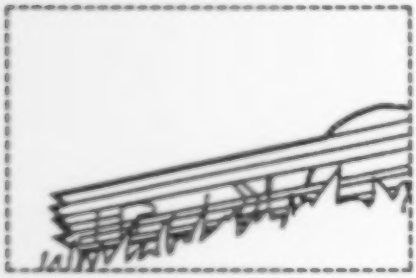


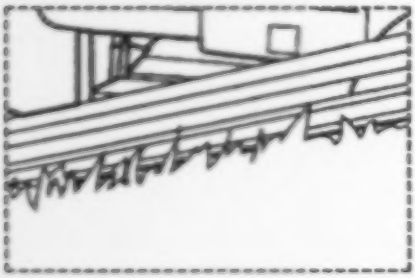
Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

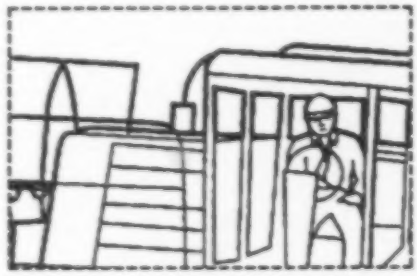
Name _____

Ag Puzzle F

This big machine is called a combine. It cuts the grain, cleans it and puts it into a truck.







*Bread is made from an Oklahoma grain. Do you know the name of the grain?*_____

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

WHO'S IN THE HEN HOUSE? VA 9

SUBJECT: Visual Arts GRADES: K-1

CONCEPT: I COMMODITY: Poultry

LEARNER OUTCOME

Grades One through Three: III. C. Students will observe the visual qualities of the community environment and demonstrate recall of observations through oral, written and pictorial response.

LEARNER OBJECTIVE

The student will learn to identify an egg, chick, hen and rooster.

LESSON

A. Step-by-Step Instructions

1. Bring in a hard-cooked egg and discuss its origin. *What are some of the things you can do with an egg?* (Scramble it. Hard-cook it. Decorate the outer shell. Beat it, and smooth it on your hair as a conditioner.)
2. Discuss where chickens are found and what they need to stay live.
3. Hand out the student worksheets.

Worksheet A - Discuss the directions, and have students complete the worksheet.
Worksheet B - Have students connect the dots to practice counting and letter identification.

B. Background

Most of the chickens produced in Oklahoma are raised in the eastern part of the state. Large companies operate most of the poultry farms. These farms are efficiently run to control the quality of the chicken produced.

A flock of chickens will not mature properly if certain basic needs are not met. In order to stay healthy, a chicken must have clean water, clean troughs and good feed. The feed must have all the nutrients the chicken needs to grow. In winter, the birds need warm water to drink and heat lamps to keep them warm. In summer they need lots of fresh air. Chickens do not like hot weather. Adult birds need pens, roosts and nests, for laying eggs. The floors are covered with litter, made from wood shavings or straw. This helps keep the floor dry and protects the birds from the hard floor or ground. Everything has to be very clean.

Source: OSU Cooperative Extension Service, Animal Science Dept.

C. Resources

Books

Heine, Helme, *The Most Wonderful Egg in the World*, Aladdin, 1983.
Polacco, Patricia, *Just Plain Fancy*, A Bantam Little Rooster Book, 1990.
Watts, Barrie, *Chicken and Egg*, Silver-Burdett, 1987.

Additional Resources

American Egg Board, P.O. Box 858, Park Ridge, IL 60068-0858.
California Egg Commission, 1150 N. Mountain Ave., Suite 14, Upland, CA 91786.
Teaching Scientific Things . . . Like Eggs, Barbara Bannister, 1925 SE Taggart, Portland, OR 97202-2252 (a book of simple activities to teach the science of eggs, $17).

D. Evaluation

Did the children cut and paste the pictures in the correct places in the chicken yard? Were students able to connect the dots so they could identify the hen and chick on the worksheet?

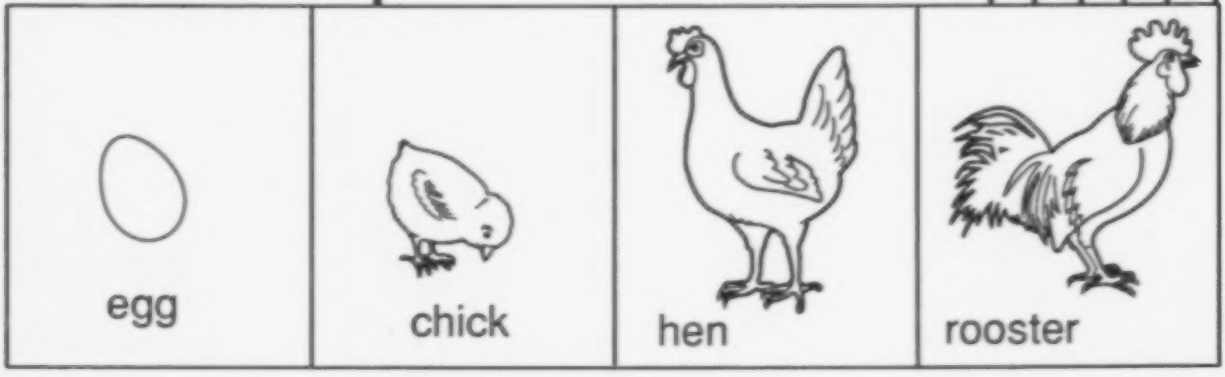
E. Related Activities

1. Incubate some chicken eggs or quail eggs in the classroom. The eggs can be used to demonstrate a developing embryo. Contact your county Extension agent about the 4-H Chick Embryo Science Project.
2. Create egg shell art. Use dye to color broken egg shells in different colors. Give students a simple outline (of an eggshell or a chick). Have students paste the broken eggshells within the lines. The egg shells will add color and texture to the outline.

Name _____

Who's in the Hen House? A

Cut out the chickens. Place them in the hen house or out in the barnyard. Color the picture.



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Who's in the Hen House? B

Connect the dots. Start at 1. Then start with A.

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

HAMBURGER HUNT

VA 10

SUBJECT: Visual Arts

GRADES: 1

CONCEPT: I

COMMODITY: Beef

LEARNER OUTCOME:

Grades One through Three. I. G. The student will learn to enjoy and respond to a variety of art media and art forms.

LEARNER OBJECTIVE

The student will talk about where hamburger comes from.

LESSON

A. Step-by-Step Instructions

1. Share the background information about hamburger.
2. Hand out student worksheet.

B. Background

Do you know where hamburgers comes from? They don't just appear overnight in your favorite fast food restaurant. It takes about two years to get beef to the table.

The mother cow carries the baby calf for a little longer than one school year. The average calf will weigh 75-100 pounds at birth, about the size of you and one of your friends. Calves grow by drinking milk from their mothers and by eating green grass from pastures. During the winter calves are kept in feed lots and fed grain rations. Sometimes they are allowed to graze on the small, green winter wheat grown in Oklahoma.

When the calf weighs about 1,200 pounds, it is ready to be made into beef. Some of the beef is cut into steaks and roasts. The rest is ground into hamburger meat. Leather for making shoes, belts, and wallets also comes from beef calves.

Source: OSU Cooperative Extension Service, Animal Science Department

C. Resources

Books

Cook, Janet, and Shirley Bond, *Where Food Comes From,* EDC, 1989.
Davis, Kay and Wendy Oldfield, *Starting Science Series,* Steck-Vaughn, 1991.
Showers, Paul, *What Happens to a Hamburger?* Harper Trophy, 1985.

Additional Resources

Oklahoma Beef Industry Council, 5101 N. Classen, Suite 210, Oklahoma City, OK 73118, (405)840-3777.
Oklahoma Cattlemen Association, 2500 Exchange, Oklahoma City, OK 73108, (405)235-4391.

D. Evaluation

Your students should find 12 hamburgers hidden in the drawing. Point out that hamburger comes form the cow.

E. Related Activities

1. Your class will enjoy a field trip to see hamburgers being cooked. You may visit a restaurant or even the school cafeteria.
2. Prepare nachos with browned ground beef sprinkled over the top.
3. Sample beef jerky and discuss why this is an easy way to carry meat to eat. Or make your own beef jerky, using the instructions printed on the back of this page.

Beef Jerky

Use very lean flank steak that is partially frozen so it will be easier to cut. Cut the meat into thin strips, 1 1/2 to 2 inches wide. Dip the strips in teriyaki sauce.

Sun Dried - Tie small packages of the strips of meat in cheese cloth, and hang them in a sunny window. Keep the packages loose enough so air can circulate around the strips. Shake the packages gently every day or two to make sure the strips are getting plenty of air. In about a week, the meat should be shriveled and black and brittle.

Oven Dried - Arrange the seasoned strips of meat in a single layer on wire racks. Place a piece of aluminum foil on the bottom of the oven to catch drippings. Preheat the oven to 150 degrees and then turn the heat back to 120 degrees. Place the meat in the oven, leaving the oven door open at the first stop. After five or six hours turn the strips over. Continue drying at the same temperature for four hours more. When dry enough, jerky is shriveled and black. When cooled, the jerky should be brittle.

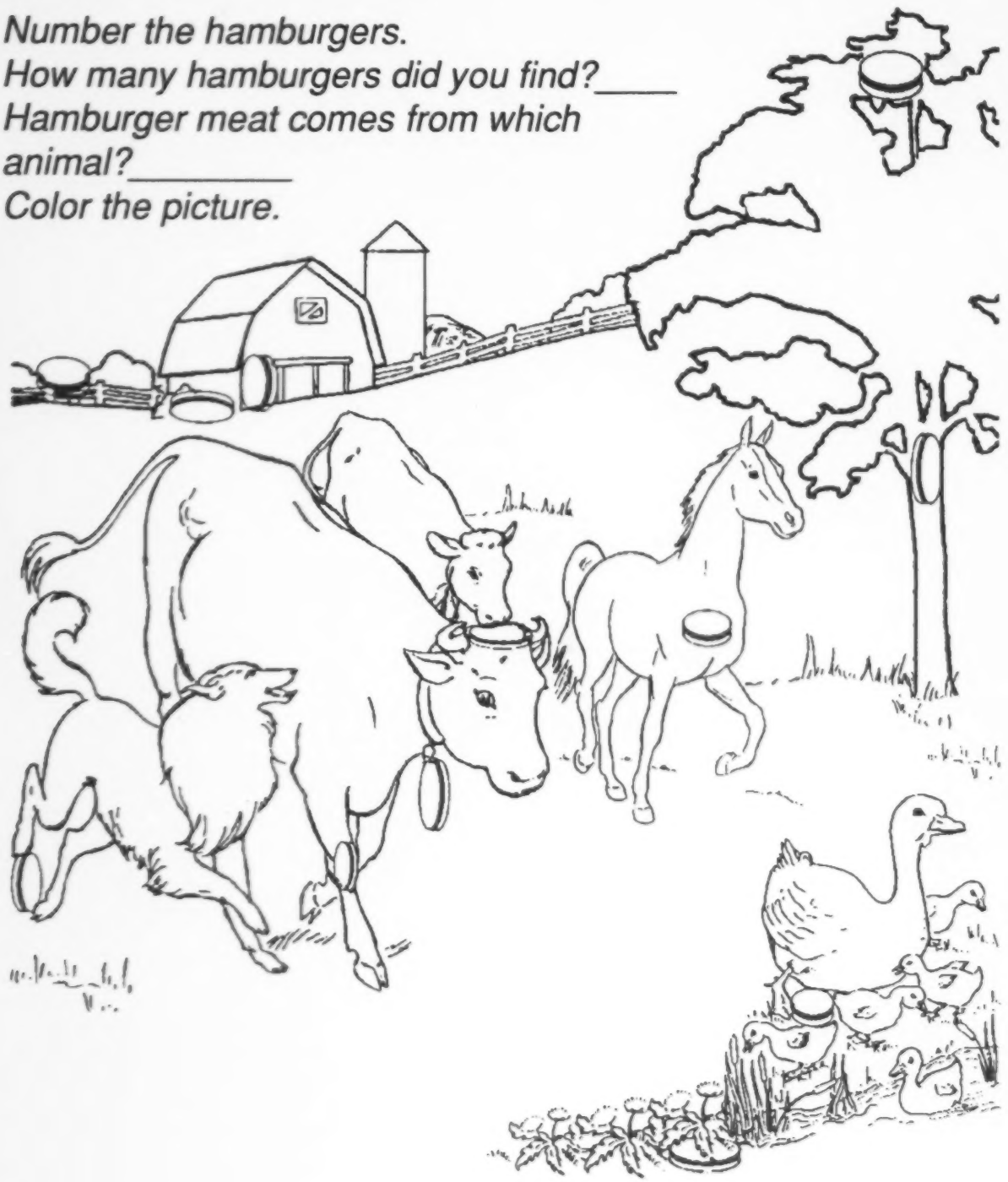
Microwave Dried - Arrange the seasoned strips of meat flat and close together on a microwave-safe bacon rack. Cover with waxed paper and microwave at *medium low.* Turn the strips over, placing the drier strips in the center of the rack. Rotate the rack one-half turn, and continue microwaving at *medium low* for 21 minutes until the strips are dry but slightly pliable. Remove to the paper towels. Repeat with remaining strips. Cover the strips with paper towels and let them stand for 24 hours.

Storage - Wrap the sticks of jerky in plastic wrap, and put them in a container with a tight-fitting lid. Store in the refrigerator or freezer. Eat the jerky dry or reconstitute it by simmering it in water.

Name _____

Hamburger Hunt

Number the hamburgers.
How many hamburgers did you find?____
Hamburger meat comes from which animal?_____
Color the picture.



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

MOO . . . SAID GRADY THE COW

SUBJECT: Visual Arts **GRADES:** 1-2

CONCEPT: I **COMMODITY:** Beef

LEARNER OUTCOME

Grades One through Three: I E. The student will learn to perceive and interpret mood and feelings in a variety of art media.

LEARNER OBJECTIVE

The students will listen to the story of Grady the Cow and then follow directions to make farm animal puppets.

LESSON

A. Step-by-Step Instructions

1. Read the story "Grady the Cow" to the class.
2. Explain how to make a sack puppet.
3. Have the students color and cut the cow, pig, horse and lamb puppets, then paste them on sacks.

B. Background

Grady the cow was a Hereford cow. This breed of cattle originally came from England. Hereford cows can be identified by their red bodies and white faces. Some Hereford cattle have white markings on their bodies, too.

C. Resources

Additional Resources

Mabel C. Fry Public Library, 500 W. Main, Yukon, OK 73099 (Sue Kilmer, librarian).

Oklahoma Beef Industry Council, 5101 N. Classen, S-210, Oklahoma City, OK 73118, (405)840-3777.

"Our Friend Herfy," Nebraska Hereford Auxiliary, c/o Meneda Phifer, Rt. 1, Mason City, NE 68855 (activity and coloring book, $4 per set, plus 90 cents postage).

D. Evaluation Methods

Were the children able to make the puppets?

E. Related Activities

1. Using an encyclopedia, locate Hereford cattle and look at pictures of other breeds.
2. Have the students use their sack puppets to act out a play about Grady. Make a silo out of a large piece of construction paper. Cut out an opening and paste a picture of Grady behind it so part of the cow can be seen outside the silo. Have the first group read and act out the play, using the cow puppet to play Grady. Before the group gets to the winning suggestion from the newspaper article, let the remaining students use their puppets to make their own suggestions about how to free Grady.

Ernest Berousek
Sue Kilmer

Yukon Becomes Famous with Grady, the Cow

Yukon was a little town in 1949. Probably very few people knew about it outside of Canadian County and Oklahoma. But in February of that year, the town of Yukon made headlines across the United States, because it was the home town of a cow with an interesting problem.

Grady, a Hereford cow weighing 1,400 solid pounds, had just given birth to a dead calf. In her confusion she became so startled that she leapt through a small opening in a nearby silo. The hole that Grady went through so suddenly and successfully measured only 17.5 inches by 25.5 inches. If Grady's owner, Bill Mach, hadn't been there, he would never have believed the cow could have managed the act.

Now Farmer Bill really had a problem--how to get Grady out of the silo. Both the cow and the silo were too valuable to lose. The structure of the silo, with the opening encased in steel, did not allow for any widening of the hole. Nor could Grady be made any narrower. What to do? Bill Mach requested help, and local and distant newspapers picked up the S.O.S.

Even more amazing than the fact that Grady had gotten into the silo was the response Bill received from people with ideas to help free the cow from the silo, which had become a 16-foot cell. Calls and telegrams poured in from St. Louis, Denver, Chicago, San Antonio, Des Moines, and even Canada. Some of the suggestions were: use a helicopter to lift Grady out; bring an attractive bull near to lure Grady out; fill in the silo with water and float the cow to the top.

Help is on the way!

The winning suggestion came from Ralph Partridge, farm editor of the *Denver Post,* who not only made the suggestion but flew to Yukon to carry out his idea of greasing Grady's body, sedating her, and then pulling and pushing her through the opening. It worked! After a five-day stay in the silo, Grady was free.

The fame of Grady, the cow, continued. *Yukon Sun* editor, Bob Park, renamed his editorial column "Down by the Silo" in her honor. A local merchant used the Grady incident as an advertising notion, claiming "Don't let your cow jump into your silo. But, in case she does, remember this is the place to get your grease!"

Grady also attended the Oklahoma State Fair and was quite a drawing card for the fair and for the town of Yukon. People would go to the fair to see Grady and take her picture. Then they would travel to Yukon to photograph the silo in which she was trapped.

In addition, a children's book called *The Cow in the Silo* was published. The book was based on Grady's story and became very popular.

Grady took her nation-wide publicity and sudden fame very calmly. She lived until she was 18 years old. When she died, in 1961, her story once again made front-page coverage in the newspapers.

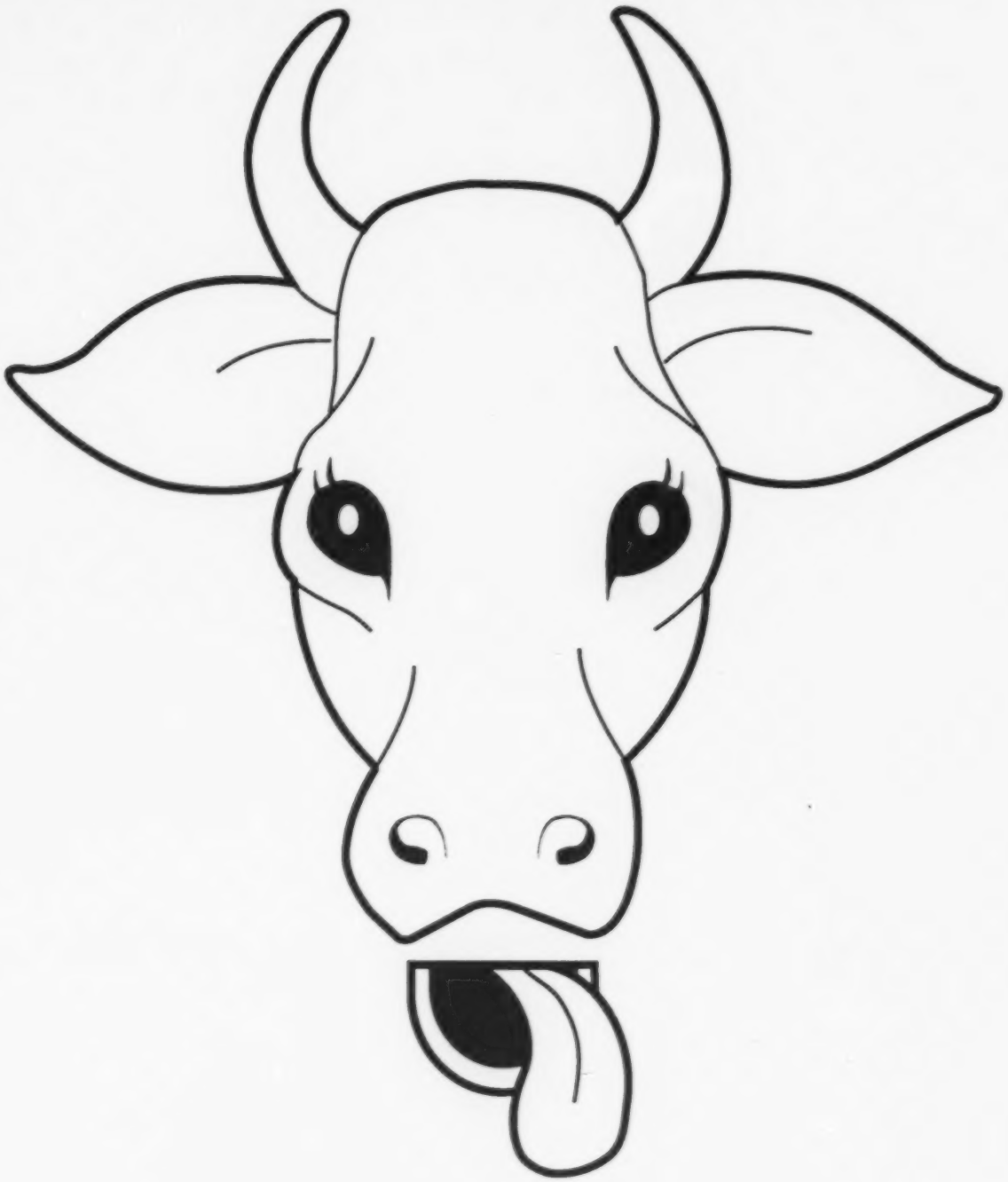
As for the well-known silo, it still stands as a remembrance of the event. It is located on the west side of Highway 92 and can be easily seen south of the I-40 overpass. The farmstead has been removed, and the silo stands alone. Grady's owners, the Bill Mach family, now live some distance from the silo.

Clarence Wright, the current owner of the property, intends to leave the silo as it is. Since the silo is now located in a choice commercial area, maybe someday a restaurant or other public structure will be built at the silo site, and people will look out the window and wonder, "How did Grady, the cow, ever go through that small opening?"

Name _____

Moo . . . Said Grady, the Cow

Cut out the cow puppet head and glue it to a paper bag.



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Moo . . . Said Grady, the Cow

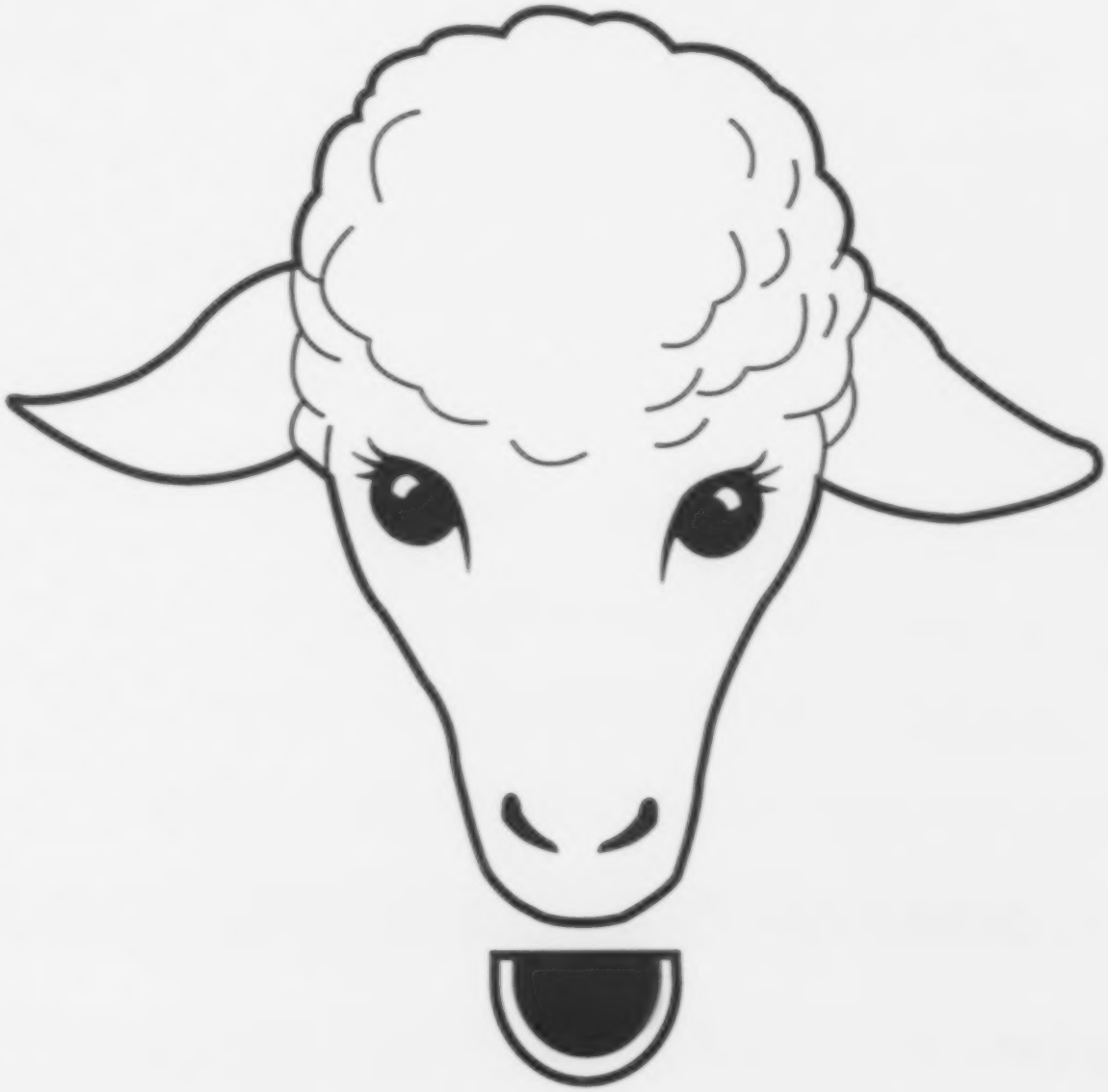
Cut out the horse puppet head and glue it to a paper bag.

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Moo . . . Said Grady, the Cow

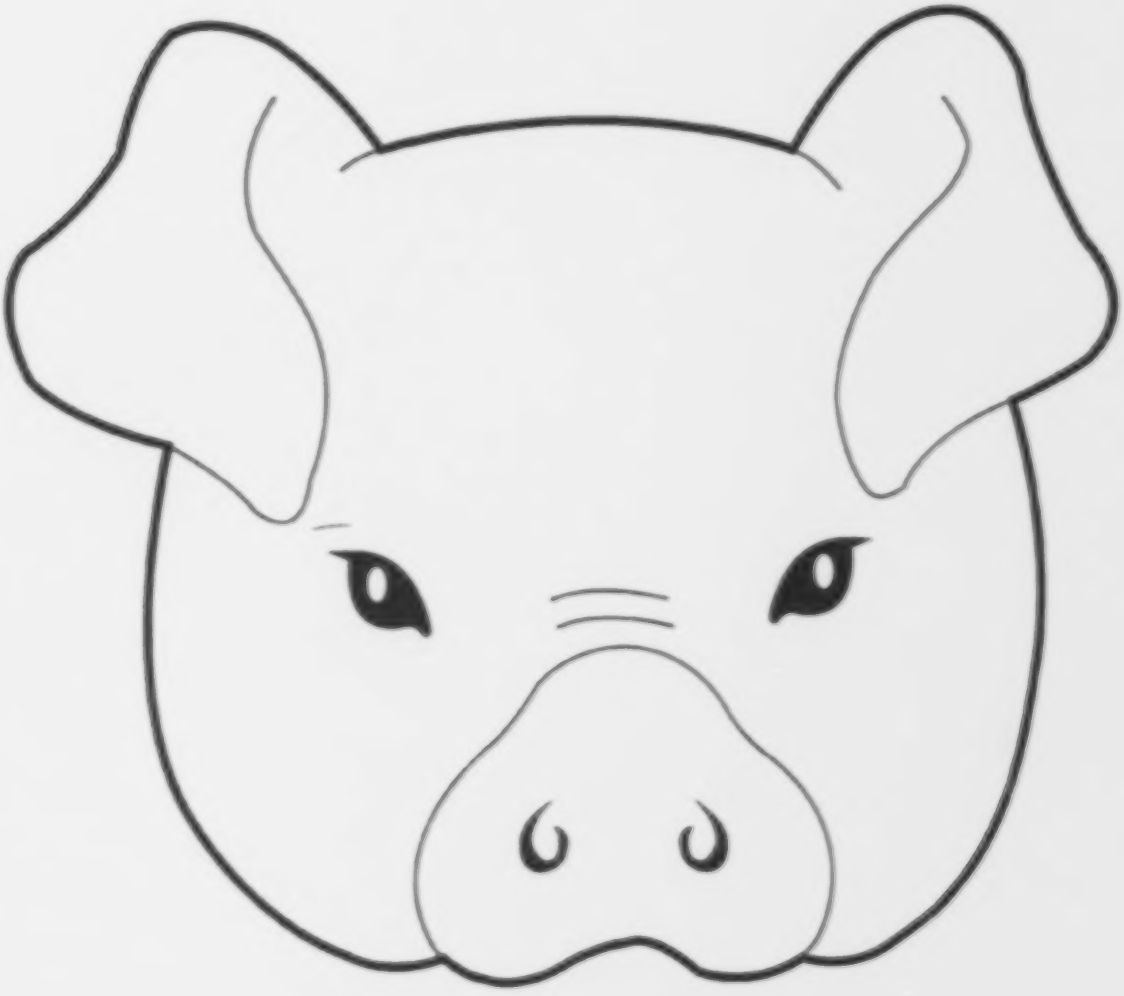
Cut out the lamb puppet head and glue it to a paper bag.



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Moo . . ., Said Grady, the Cow



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

WEAVING WOOL

VA 12

SUBJECT: Visual Arts

GRADES: 1-2

CONCEPT: III

COMMODITY: Wool

LEARNER OUTCOME

Grades One through Three: IV. C. The student will engage in creative drawing, painting, designing, sculpting, constructing, weaving and printmaking.

LEARNER OBJECTIVE

The student will have a simple understanding of weaving and will weave paper strips together to create a placemat.

LESSON (No student worksheet is needed for this lesson.)

A. Step-by-Step Instructions

1. Bring in scraps of wool or some other loosely woven material. Show students how to pull a loose thread from one side of the cloth so they can see the weave of the fabric. Point out that one set of threads goes up and down and another set goes from side to side.
2. Share the background information.
3. Cut 1- by 11-inch strips of construction paper ahead of time. Prepare enough so each student will have enough to weave a placemat.
4. Fold 11- by 17-inch sheets of construction paper in half. Keep the paper folded.
5. Starting at the folded edges, draw cutting lines one inch apart, stopping about 1 1/2 inches from the edge of each paper.
6. Have students cut the folded paper along the lines you have drawn. Make sure they stop before they cut all the way through.
7. After the "warp" lines have been cut and the paper unfolded, have students weave the 1-inch strips over and under the "warp" lines, pushing each strip next to the previous one until the paper is complete. Trim the edges of the woven strips, then put a spot of glue on the end of each strip to secure it. Display the placemats on the bulletin board, or laminate them so students can use them as real placemats.

B. Background

After the wool of a sheep has been cut, or ***sheared****, it is sent to the factory where it is washed, dyed, carded (brushed) and spun into yarn. Then it is ready to knit, crochet or* ***weave*** *into a blanket, a rug, a sweater, a pair of socks, or some other article of clothing.*

People who weave cloth set up the ***warp*** *threads first. The warp threads are the threads that go up and down. The* ***weft*** *threads are woven side to side through the warp threads. This action locks the threads together.*

Today most weaving is done in factories, by machines. The machines are faster than the old fashioned wooden looms, and the patterns they create are more uniform.

Source: OSU Cooperative Extension Service, 4-H Project Manual

C. Resources

Books

Amery, Heather, *The Naughty Sheep,* EDC Publishing, 1990.
Demi, *Fleecy Lamb,* Putnam, 1987.
Dixon, Annabelle, *Wool,* Thread Series, Garrett Educational Corp., 1990.
Lewis, Kim, *Emma's Lamb,* Macmillan, 1991.
Shaw, Nancy, *Sheep in a Jeep,* Houghton-Mifflin, 1986.

Additional Resources

American Wool Council, Wool Education Center, 200 Clayton St., Denver, CO 80206

D. Evaluation

Did the students enjoy the activity? Was the student able to weave a simple pattern into the placemat?

E. Related Activities

1. Weave Japanese lanterns. Weave a simple placemat like the one you created in Step 3 of the lesson. Glue the woven strips down at the ends. Bring the ends of the placemat together to form a cylinder shape. Tape or staple together to hold. Place a construction paper handle at the top of one opening. Hang from the classroom ceiling.
2. Yarn for weaving must first be spun. Spinning is at the center of many childhood fairy tales. Brainstorm some fairy tales in which spinning plays a role. Ask students to remember what the fairy tale characters were spinning in the stories.
3. Invite the parents of some of your students to class to demonstrate simple knitting or crocheting.

I LIKE IT!!

VA 13

SUBJECT: Visual Arts

GRADE: 2

CONCEPT: III

COMMODITY: Miscellaneous

LEARNER OUTCOME

Grades One through Three: III. A. The student will learn to analyze the structural content of art by responding to design elements and principles, such as color, line, shape and texture.

LEARNER OBJECTIVE

To increase the student's appreciation of art.

LESSON

A. Step-by-Step Instructions

1. Let students view a print of an agriculture-related painting. Some suggested paintings are listed in the background materials.
2. Discuss the painting with students. Make sure you ask specific questions. Some suggested questions follow:

What do you see? (Ask several students.) *How many?*
What animals do you see in the painting?
Is this scene in the city or the country?
How are the buildings different from those in the city?
What season of the year is it? How can you tell? What does a farmer do during this time of year?
If the painting is of a dairy farm, discuss where milk comes from and how it gets to the store.
Talk about the differences in clothing. *How is the clothing different from what we wear today? How is it different from the clothing worn in the city.*
Discuss the type of transportation shown in the picture and how it differs from transportation used today or in the city.
Discuss the differences between farm animals and city pets.
Ask students to imagine the painting is of a scene in real life and describe what might happen there on an average day.

B. Background

The following paintings contain scenes which students should be able to identify as agriculture-related.

Pieter Bueghel	"The Harvesters"
	"The Harvesters' Meal"
	"Haymaking"
Paul Cezanne	"Apples and Oranges"
Currier & Ives	"American Farm Scenes"
	"Home"
	"Thanksgiving"
	"Market Preparation"
	"Trotting"
	"Cracks-The-Forge"
Paul Gauguin	"Harvest Scene"
Claude Monet	"Chrysanthemums"
	"Tulips in Holland"

Pierre-Auguste Renoir	"Girl and Watering Can" "Gladiolas" "Monet Painting in His Garden" "Mossy Roses"
Vincent Van Gogh	"Iris" "Landscapes at Arles" "The Orchard" "Farmer in the Field" "Farmhouses" "Sunflowers"

C. Resources

Hollingsworth, Patricia, and Stephen Hollingsworth, *Smart Art*, Zephyr, 1989.
Peppin, *The Usborne Story of Painting*, EDC Publishing, 1988.
Venezia, Mike, *Da Vinci*, Children's Press, 1989.
Venezia, Mike, *Monet*, Children's Press, 1990.
Venezia, Mike, *Picasso*, Children's Press, 1988.
Venezia, Mike, *Rembrandt*, Children's Press, 1988.
Venezia, Mike, *Van Gogh*, Children's Press, 1988.

D. Evaluation Methods

Did the activity expand the students' knowledge of art and of the rural scene in the picture? Did the students respond to the art work in a positive or inquisitive manner?

Name _____

I Like It!

1. What animals are in the picture?

2. What type of buildings are in the picture?

3. What might happen in the picture on a normal day?

4. On the back of this paper, design and color a picture that shows your idea of farm life.

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Glossary

The following terms are used in the K-2 lessons. While many of the terms may have additional definitions, those given most closely and simply define the way the word is used in the lessons.

alfalfa - a plant having compound leaves and clusters of small purple flowers, widely cultivated for forage.

aquaculture - fish farming.

barn - a building on the farm where animals stay when it is cold and where farm equipment is stored.

beef - the flesh of a cow, steer, heifer or bull.

beef cattle - type of cattle raised mainly for meat.

beef steer - a castrated bull calf, generally one intended for use as meat.

beneficial insect - an insect that helps farmers, either by pollinating plants or by eating bugs that are harmful.

boar - a male pig.

bovine - a family of animals which includes cattle and oxen.

branch - a secondary woody stem or limb growing from the trunk or main stem of a tree, bush or shrub.

bull - the male of any bovine species.

butcher - person at the supermarket who cuts meat into pieces for selling. Sometimes called a "meat cutter."

buy - to get something by trading money for it.

calf - the young of the bovine family.

carbon dioxide - a gas which is harmful to humans and animals. Humans and animals breathe carbon dioxide out and plants breathe it in. Carbon dioxide is also formed in the air by burning petroleum, wood, coal and other carbon fuels.

carcass - animal after the hide, head, hooves and internal organs are removed to make it ready for the supermarket.

cattle - live animals held as property or raised for some use, usually mature bovine animals, such as cows, bulls and steers.

chick - the young of the chicken family.

chlorophyll - the green coloring in a plant which helps plants make food.

clover - a valuable pasture plant with compound leaves and tight heads of small flowers.

cluster - a group of something.

combine - a power-operated harvesting machine that cuts, threshes and cleans grain.

cotyledons - The part of a seed that supplies energy for the baby plant until it begins to make its own food.

cow - the mature female of any bovine animal.

crops - cultivated plants or agricultural produce, such as grain, vegetables or fruit.

cross timbers - a region where different types of plants mix, such as the post oak and blackjack oak forest area in the east central part of Oklahoma, dividing forest from range or pasture lands.

crown - the upper part of a tree, including the leaves and living branches.

dairy cattle - type of cattle raised mainly for its milk.

dairy products - products made from milk.

dormant - a period of rest.

embryo - the baby plant inside the seed which grows into the new big plant. When the seed is soaked in water, the seed coat will soften and let go, allowing the embryo to push through and grow. (the term as used with animals is not discussed in this unit.)

expand - grow larger.

expense - money that is paid out.

ewe - a female sheep.

farm - the fields, buildings, animals and personnel used for the purpose of agricultural products.

feedlot - a place where cattle are kept in a small space and fed special food so they will grow larger.

fleece - the wool of a sheep cut once a year and spun into yarn. The wool is used to make sweaters, caps, coats, socks, blankets and other coverings.

forestry - the management of forest lands.

gander - a male goose.

germinate - to begin to grow. When a seed gets light, air and water, the stem and root of the plant emerge from the seed.

goose down - fine, soft, fluffy feathers on young birds and under the outer feathers on adult birds.

gosling - the young of the goose family.

grain - the seeds of cereal grasses (wheat, oats, barley, etc.)

grass - a kind of plant with narrow leaves, hollow stems and spikes of flowers, which sheep, goats, horses, and cattle can eat.

grassland - an area where mostly grass grows, such as a prairie or meadow.

grazing - when animals eat grass in the field.

groundwater - water that soaks into the soil and flows underground.

grow - to increase in size by natural process.

hamburger - ground beef.

hardwoods - trees that lose their leaves all at once.

harvest - to gather a crop.

hay - grass or other plants cut, dried and baled for animals to eat.

heifer - a young cow, especially one that has not yet given birth to a calf.

hen - an adult female chicken.

herd - a number of large animals assembled together.

hog - a pig weighing over 120 pounds.

homogenize - method used to break up the fat in milk so it won't rise to the top.

husk - a shell or outer layer of many fruits or nuts, as of an ear of corn or nut.

hydroponics - a way of growing plants in nutrient-rich liquid instead of soil.

income - money earned in exchange for working or selling goods or property.

incubate - to keep eggs warm so they will hatch.

lanolin - a yellowish-white fatty substance found in wool and used to make soaps, cosmetics and ointments.

loom - a machine or device from which cloth is produced by interweaving thread or yarn a right angles.

meat - the flesh of an animal that can be eaten.

milk - a white liquid produced by cows to feed their off spring, or in the case of dairy cows, used to produce dairy products.

mutton - the flesh of fully grown sheep used for food.
natural resource - something that occurs in nature and is valuable to man.

order - a logical or comprehensible arrangement.

oxygen - a gas in the air and in the water which all living things must have to live. Oxygen is released into the air by plants.

packing plant - place where animals are killed and made ready for the supermarket.

pasteurize - the process used to destroy harmful organisms in milk.

pasture - a field of grass where animals live and eat.

peg - the flower stalk of a peanut plant on which peanuts are formed. Although the flower grows above ground, the peg is pulled underground by gravity.

perimeter - the outer limits of an area.

pork - the flesh of a pig or hog used for food.

poultry - domestic fowl, such as chickens, turkeys, ducks or geese, raised for meat or eggs.

price - the amount of money paid for something.

ranch - a large farm on which large herds of cattle, sheep or horses are raised.

raw milk - milk when it first comes out of the cow, before it is pasteurized and homogenized.

roast - a cut of meat suitable for roasting.

rooster - the adult male of the chicken family.

roots - the underground portion of a plant that serves as support, draws food and water from the surrounding soil, and stores food.

save - to keep something (money), instead of spending, wasting or losing it.

seed - a protective case surrounding a new plant.

seedling - a young plant grown from a seed.

sell - to trade something for money.

shear - to remove the wool of the sheep by cutting or clipping.

sodium chloride - a colorless crystalline compound used as a food preservative and seasoning.

softwoods - trees that have leaves or needles all year and lose them only a few at a time.

soil - naturally-occurring mixture of minerals, organic matter, water and air, which forms the surface of the land.

spend - to use up or pay out something.

spinning - process of twisting and pulling wool or other materials into yarn.

spinning wheel - a wheel used for spinning materials into yarn.

steak - a slice of meat cut across the muscle grain and usually broiled, grilled or fried.

swine - the family of mammals to which boars, sows, and pigs belong.

taproot - the main root of a plant, growing straight downward from the stem.

texture - a grainy, fibrous, woven or dimensional quality as opposed to a uniformly flat, smooth surface.

thallophytic plant - a plant-like organism of the division which includes algae fungi and bacteria.

timberland - forested land considered commercial.

truck - a vehicle that has many uses on the farm. Refrigerated milk trucks carry milk from the dairy farm to the processing plant. Trucks also carry the milk and other farm products to the grocery store. Farmers and ranchers use trucks to carry feed and cattle from place to place. The trucks also help the farmer carry feed from town and cattle to town.

trunk - the main woody axis of a tree.

twig - a small branch or slender shoot, as of a tree or shrub.

vitamin - natural substances that plants and animals need to grow.

warp threads - lengthwise threads in woven fabric.

water - a clear liquid all plants and animals need to live.

water cycle - the continuous movement of water, from Earth to atmosphere and back again.

watercress - a plant grown in freshwater ponds and streams, used in salads and as a garnish.

weft threads - crosswise threads in woven fabric.

weight - a measure of the heaviness or mass of an object.

wheat - a cereal grass from which flour, spaghetti, macaroni and other products are made. Hard red winter wheat is the kind of wheat most often grown in Oklahoma.

windbreak - a hedge, fence or row of trees planted so it will break the force of the wind.

Suggestions for Requesting Information and Assistance

Be specific

Your chances of obtaining information will be greatly increased if you state exactly what you need, which issues interests you, or what questions you need answered.

Avoid class-wide requests

Avoid assigning projects to students where numerous individual requests might be made. If you cannot avoid a situation where many students ask for similar information, send all of the request together and ask that the reply be returned in one envelope for the total group.

Request only what you need

...and use what you get.

Try local sources

Many community and regional agencies, organizations, associations and individuals can provide valuable information and assistance, particularly on local issues and conditions. Visit both your school library and public library for more information.

Send a Self-addressed, stamped envelope

Most agencies, both private and public operate on limited budgets. When making a request send along a self-addressed, stamped envelope. Many times this will bring a quicker reply.

Plan on a two to three week lead time

If you plan to use a pamphlet or poster in conjunction with an activity, send your request at least two or three weeks early. If you plan to use a video or film, you may need to reserve it even earlier.

Make speaker requests well in advance

Most agencies and volunteer organizations cannot afford to send their staff or members great distances to speak to small groups or one class. However, they may send personnel to meet groups on field trips near their offices or field stations. Generally presentations in the field allow for more hands-on activity and are superior to a formal speech in the classroom.

Remember to say thanks

Letters of thanks that say how materials were used or how a visit enhanced the learning process can help influence future availability of resources .

Resources

Books

Adams, Pam (illus.), *Old MacDonald Had a Farm*, Child's Play Ltd., 1975.
Adoff, Arnold, *In for Winter, Out for Spring*, Harcourt, Brace, Jovanovich, 1991.
Aliki, *Corn is Maize*, Harper Row, 1991.
Aliki, *The Story of Johnny Appleseed*, Simon & Schuster, 1987.
Amery, Heather, and Annie Civardi, *The Know How Book of Print and Paint*, EDC, 1977
Amery, Heather, *The Naughty Sheep*, EDC, 1990.
Amery, Heather, ed., and Stephen Cartwright, illus., *The Usborne Book of Funny Poems*, Usborne, 1990.
Amery, Heather, *What's Happening? On the Farm*, EDC, 1984.
Amor, Jennifer, *Flavor Quilts For Kids to Make*, American Quilter's Society, 1991.
Andrews, Jan, *The Auction*, Macmillan, 1991.
Anello, Christine, *The Farmyard Cat*, Ashton Scholastic, 1987.
Anno, Mitsumasa, *Anno's Journey*, Philomel, 1978.
Ardley, Neil, *The Science Book of Color*, Gulliver, 1991.
Arvetis, Chris, and Carole Palmer, *What Is a Rainbow?* A Just Ask Book, Checkerboard, 1988.
Arvetis, Chris, and Carole Palmer, *Why Do Leaves Change Color?* Rand-McNally, 1986.
Arvetis, Chris, and Carole Palmer, *Why Is the Grass Green?* Rand-McNally, 1985.
Arvetis, Chris, and Carole Palmer, *Why Is the Sky Blue?* A Just Ask Book, Checkerboard, 1988.
Averous, Pierre, and Cathy Poth (trans.), *Animals Around Us*, Silver-Burdett, 1989.
Baines, Chris, *An Ecology Story Book*, Interlink, 1990.
Baines, Chris, *Flower*, Interlink, 1990.
Balan, Bruce, *The Cherry Migration*, Green Tiger Press, 1988.
Barden, Helen, *Busy Little Gardener*, Jelly Bean, 1990.
Baylor, Byrd, *The Way to Start a Day*, Macmillan, 1978.
Berenstain, Stan, and Jan Berenstain, *The Berenstain Bears and the Prize Pumpkin*, Random House, 1990.
Berrends, Polly Berrien, *The Case of the Elevator Duck*, Random House, 1973.
Bjork, Christina, *Linnea's Almanac*, Gordon's Books, 1989.
Bjork, Christina, and Lena Anderson, *Linnea's Windowsill Garden*, R & S, 1988.
Blood, Charles L., and Martin Link, *Goat in the Rug*, Macmillan, 1990.
Bloome, Enid, *Water We Drink!* Doubleday, 1971.
Bond, Shirley, and Janet Cook, *Where Food Comes From*, EDC, 1989.
Bourgeois, Paulette, *The Amazing Dirt Book*, Addison Wesley, 1991.
Bourgeois, Paulette, *The Amazing Paper Book*, Addison Wesley, 1991.
Bourgeois, Paulette, *The Amazing Potato Book*, Addison Wesley, 1991.
Bourgoing, Pascale, *Colors*, First Discovery Book, Scholastic, 1989.
Bourgoing, Pascale, *Fruit*, First Discovery Book, Scholastic, 1989.
Bourgoing, Pascale, *The Ladybug and Other Insects*, First Discovery Book, Scholastic, 1989.
Bourgoing, Pascale, *Weather*, First Discovery Book, Scholastic, 1989.
Brandt, Keith, *Discovering Trees*, Troll Associates, 1982.
Brooks, F., *Protecting Our Rivers and Seas*, EDC, 1991.
Brown, Craig, *My Barn*, Greenwillow, 1991.
Brown, Elizabeth B., *Vegetables*, Prentice Hall, 1981.
Brown, Margaret Wise, *Baby Animals*, Random House, 1989.
Brown, Margaret Wise, *Big Red Barn*, Random House, 1989.
Burgess, Gelett, "I Never Saw a Purple Cow," *A Nonsense Anthology*, Dover, 1958.
Callen, Larry, *Pinch*, Little, Brown, 1975.
Carle, Eric, *The Grouchy Ladybug*, Harper Trophy, 1977.

Carle, Eric, *Tiny Seed*, Picture Book Studio, 1987.
Carle, Eric, *The Very Hungry Caterpillar*, Harper Trophy, 1985.
Carle, Eric, *The Very Quiet Cricket*, Putnam & Grassel, 1990.
Carrick, Donald, *Milk*, Greenwillow, 1985.
Cartwright, Stephen, *Apple Tree Farm*, EDC, 1991 (press-out model).
Chester, Michael, *Let's Go to Stop Water Pollution*, Putnam, 1969.
Civardi, Anne, *The Farmer*, EDC, 1986.
Claridge, Marit, and John Shackell, *A Simple Introduction to Living Things*, Usborne, 1985.
Claridge, Marit, and John Shackell, *Living Things*, EDC, 1986.
Coats, Laura Jane, *The Almond Orchard*, Macmillan, 1991.
Cole, Ann, Carolyn Haas, Elizabeth Heller and Betty Weinberger, *A Pumpkin in a Pear Tree: Creative Ideas for Twelve Months of Holiday Fun*, Little, Brown, 1976.
Cole, Ann, Carolyn Haas, Betty Weinberger and Faith Bushnell, *I Saw A Purple Cow*, Little Brown, 1976.
Cole, Joanna, *My Puppy is Born*, Mulberry, 1991.
Collins, David R., *Pioneer Plowmaker: A Story About John Deere*, Carolrhoda, 1990.
Cook, Janet, and Shirley Bond, *Where Food Comes From*, EDC, 1989.
Cousins, Lucy, *Farm Animals*, Tambourine, 1991.
Crews, Donald, *Freight Train*, Greenwillow, 1978.
Crozat, Francois, *I Am a Little Pig*, Barron's, 1991.
Curran, Eileen, *Hello, Farm Animals*, Troll Associates, 1985.
Dabcovich, Lydia, *Mrs. Huggins and Her Hen Hannah*, E. P. Dutton, 1985.
Davis, Kay, and Wendy Oldfield, *Starting Science Series*, Steck-Vaughn, 1991.
Day, Jenifer W., *What Is a Fruit?* Golden/Western, 1976.
Delton, Judy, *Peewee Scouts #5: Grumpy Pumpkin*, Dell Young Yearling, 1989.
Delton, Judy, *Peewee Scouts #9: Spring Sprouts*, Dell Young Yearling, 1989.
Demi, *Cuddly Chick*, Putnam, 1988.
Demi, *The Empty Pot*, Trumpet, 1990.
Demi, *Fleecy Lamb*, Putnam, 1987.
de Paola, Tomie, *Jamie O'Rourke and The Big Potato*, Putnam, 1992.
de Paola, Tomie, *The Popcorn Book*, Scholastic, 1978.
DeWitt, Jamie, *Jamie's Turn*, Raintree, 1984.
Dineen, Jacqueline, *How People Live Farming*, Schoolhouse, Inc., 1990.
Dixon, Annabelle, *Wool*, Thread Series, Garrett Educational Corp., 1990.
Dooley, Fern Pacoe, and Woodson, Jack, *Joey's Ghost*, Broadman, 1982.
Doney, Meryl, *Look What I've Found! A Cocoon*, Lion, 1991.
Dunn, Judy, *The Little Duck*, Random House, 1976.
Dunn, Judy, *The Little Lamb*, Random House, 1977.
Duvoisin, Roger, *Petunia*, Dragonfly, 1950.
Eastman, P.D., *Are You My Mother?* Random House, 1960.
Easton, Patricia, *Stable Girl: Working for the Family*, Harcourt, Brace, Jovanovich, 1991.
Ehlert, Lois, *Color Zoo*, Harper Collins, 1989.
Ehlert, Lois, *Eating the Alphabet: Fruits and Vegetables From A to Z*, Harcourt, Brace, Jovanovich, 1990.
Ehlert, Lois, *Growing Vegetable Soup*, Harcourt, Brace, Jovanovich, 1988.
Ehlert, Lois, *Planting a Rainbow*, Harcourt, Brace, Jovanovich, 1991.
Ehlert, Lois, *Red Leaf, Yellow Leaf*, Harcourt, Brace, Jovanovich, 1991.
Elting, Mary, *What Happens to a Drink of Water?* Wonder Books, 1971.
Emberley, Ed, *Ed Emberley's Little Drawing Book of Farms*, Little, Brown, & Co., 1980.
Emberley, Ed, *Great Thumbprint Drawings*, Little, Brown & Co., 1977.
Ernst, Lisa L., *Miss Penny and Mr. Grubbs*, Macmillan, 1991.
Filipek, Nina, *I Love Animals*, World International Publishing Ltd., 1986.

Flack, Marjorie, *The Story About Ping*, Scholastic, 1961.
Fleming, Denise, *In the Tall, Tall Grass*, Henry Holt, 1991.
Fowler, Allen, *It Could Still Be a Tree*, Children's Press, 1990.
Fox, Mem, *Hattie and the Fox*, Macmillan, 1988.
Frank, Josette (ed.), *Snow Toward Evening*, Dial, 1990.
Frasier, Debra, *On the Day You Were Born*, Harcourt, Brace, Jovanovich, 1991.
Galdone, Paul, *The Little Red Hen*, Seabury, 1973.
Garrick, Donald, *Milk*, Green Willow, 1985.
George, William T., *Box Turtle at Long Pond*, Greenwillow, 1989.
Gibbons, Gail, *Farming*, Holiday House, 1988.
Gibbons, Gail, *The Milk Makers*, Macmillan, 1985.
Gibbons, Gail, *Seasons of Arnold's Apple Tree*, Harcourt, Brace, Jovanovich, 1988.
Gibbs, B., *Ocean Facts*, EDC, 1990.
Gibson, R., *Kitchen Fun*, EDC, 1991.
Goor, Ron, and Nancy Goor, *Insect Metamorphosis From Egg to Adult*, Macmillan, 1990.
Graff, Nancy Price, *The Strength of the Hills: A Portrait of a Family Farm*, Little, Brown, 1989.
Greenberg, Jan, and Sandra Jordan, *The Painter's Eye: Learning to Look at Contemporary American Art*, Delacorte, 1991.
Greene, Carla, *I Can Be a Dairy Farmer*, Children's Press, 1991.
Greene, Carla, *I Can Be a Farmer*, Children's Press, 1991.
Gregory, O.B., and Elsie Wrigley, *Milk*, Rourke, 1981.
Griffin, Margaret, and Deborah Seed, *The Amazing Egg Book*, Addison Wesley, 1991.
Grossman, Bill, *Donna O'Neeshuck Was Chased By Some Cows*, Harper Trophy, 1988.
Grossman, Bill, *Tommy at the Grocery Store*, The Trumpet Club, 1989.
Guarino, Deborah, *Is Your Mama a Llama?*, Scholastic, 1989.
Gutnik, Martin J., *Ecology and Pollution: Water*, Children's Press, 1973.
Hajdusiewicz, Babs Bell, *Please Do Feed the Animals*, Steppingstone Series, Steck-Vaughn, 1991.
Hajdusiewicz, Babs Bell, *Rico's Shadow*, Steppingstone Series, Steck-Vaughn, 1991.
Hajdusiewicz, Babs Bell, *Shape Up, Curvy Snake!* Steppingstone Series, Steck-Vaughn, 1991.
Hall, Donald, *The Ox Cart Man*, Viking, 1979.
Heine, Helme, *The Most Wonderful Egg in the World*, Aladdin, 1983.
Heller, Ruth, *Chickens Aren't the Only Ones*, Grosset & Dunlap, 1981.
Heller, Ruth, *Plants That Never Bloom*, Putnam, 1984.
Heller, Ruth, *The Reason for a Flower*, Grosset & Dunlap, 1983.
Henderson, Kathy, *I Can Be a Farmer*, Children's Press, 1987.
Herriot, James, *Blossom Comes Home*, St. Martin's Press, 1988.
Hinshaw, Dorothy, *Wheat, the Golden Harvest*, Patent, Dodd, Mead & Co., 1987.
Hirschi, Ron, *Harvest Song*, Viking Penquin Junior, 1991.
Hirschi, Ron, *Spring*, Viking Penquin Junior, 1991.
Hirschi, Ron, *Summer*, Viking Penquin Junior, 1991.
Hiscock, Bruce, *Big Tree*, Macmillan, 1991.
Hobon, Brom, *Jason and the Bees*, Harper & Row, 1980.
Hollingsworth, Patricia, and Stephen F. Hollingsworth, *Smart Art: Learning to Classify and Critique Art*, Zephyr, 1989.
Imershein, Betsy, *The Work People Do: Farmer*, Julian Messner, 1990.
Ingoglia, Gina, and Denice Patrick, *Look Inside a Tree*, Putnam, 1989.
Isenbart, H., *Baby Animals on the Farm*, Putnam, 1981.
Jacobsen, Karen, *Farm Animals*, A True New Book Series, Children's Press, 1981.
James, Robin, *Baby Farm Animals*, Price, Stern, Sloan, 1983.
Jennings, Terry, *Seeds*, Franklin Watts, 1990.

Jeschke, Susan, *Perfect the Pig*, Scholastic, 1980.
Johnson, Sylvia, *Wheat*, Lerner, 1990.
Jonas, Ann, *Color Dance*, Greenwillow, 1989.
Jukes, Mavis, *Lights Around the Palm*, Alfred A. Knopf, 1987.
Kaizuki, Kiyonori, *A Calf is Born*, Orchard, 1990.
Kasza, Keiko, *The Wolf's Chicken Stew*, Putnam, 1987.
Katz, Marjorie P., *Fingerprint Owls and Other Fantasies*, M. Evans, 1972.
Kellogg, Cynthia, *Corn: What It Is, What It Does*, Greenwillow, 1989.
Kellogg, Steven, *Chicken Little*, Mulberry, 1985.
Kellogg, Steven, *Johnny Appleseed*, Morrow Junior Books, 1988.
Kindersley, Dorling, *Farm Animals*, Aladdin, 1991.
King, Elizabeth, *Pumpkin Patch*, Dutton, 1990.
King, P.E., *Down on the Funny Farm*, Random House, 1986.
Kirkpatrick, Rena K., *Look at Seeds and Weeds*, Raintree Children's Books, 1978.
Kitchen, Bert, *Pig In a Barrow*, Dial Books for Young Readers, 1991.
Knights, Roger, *The Alphabets on the Farm*, Windermere, 1982.
Koscielniak, Bryce, *Hector and Prudence*, Alfred A. Knopf, 1990.
Kovalski, Maryann, *Pizza for Breakfast*, Morrow Junior Books, 1990.
Kroll, Steven, *The Biggest Pumpkin Ever*, Scolastic, 1984.
Kun Ka, Alice K., *Moth and Frog Race*, Phonics Readers, Steck-Vaughn, 1991.
Kunhardt, Edith, *I Want to Be a Farmer*, Grosset & Dunlap, 1989.
Kurelek, William, *Prairie Boy's Summer*, Houghton-Mifflin, 1975.
Laird, Elizabeth, *The Day the Ducks Went Skating*, Tambourine, 1991.
Laird, Elizabeth, *The Day Patch Stood Guard*, Tambourine, 1991.
Laird, Elizabeth, *The Day Sidney Ran Off*, Tambourine, 1991.
Laird, Elizabeth, *The Day Veronica Was Nosy*, Tambourine, 1991.
Lasky, Kathryn, *Sugaring*, Macmillan, 1986.
Lauber, Patricia, *Seeds: Pop Stick Glide*, Random House, 1991.
Lesch, Christine, *A Farmyard Morning*, Gryphon House, 1990.
Lewis, Kim, *Emma's Lamb*, Macmillan, 1991.
Lewis, Kim, *The Shepherd Boy*, Four Winds, 1991.
Lillie, Patricia, *When the Rooster Crowed*, Greenwillow, 1991.
Lindbergh, Reeve, and Susan Jeffers, *Benjamin's Barn*, Dial Books for Young Readers, 1990.
Lindbergh, Reeve, *The Midnight Farm*, Dial Books for Young Readers, 1987.
Lobel, Arnold, *Small Pig*, Harper & Row, 1969.
Locker, Thomas, *Family Farm*, Viking Penguin Junior, 1988.
Lovett, Sarah, *Extremely Weird Spiders*, John Muir, 1991.
McDonald, Megan, *The Potato Man*, Orchard, 1991.
McFarland, Cynthia, *Cows In The Parlor*, Atheneum, 1990.
McGee, Marni, *The Quiet Farmer*, Atheneum, 1991.
McGrath, Susan, *How Animals Talk*, National Geographic Society, 1987.
McMillan, Bruce, *Growing Colors*, Lothrop, 1988.
McPhail, David, *Farm Morning*, Harcourt, Brace, Jovanovich, 1991.
McQueen, Lucinda, and Jeremy Guitar, *Tidy Pig*, Random House, 1989.
Mabey, Richard, *Oak and Company*, Greenwillow, 1983.
Maestro, Giulio, and Carolyn Meyer, *Milk, Butter and Cheese: The Story of Dairy Products*, Morrow Junior Books, 1974.
Marshall, J., *Portly McSwine*, Houghton-Mifflin, 1979.
Marshall, J., *Yummers!* Houghton-Mifflin, 1972.

Marsoli, Lisa A., and Stacie Strong, *Jake and Jenny on the Farm,* Price, Stern, Sloan, 1990 (a finger puppet play book).
Martin, Bill, Jr., and John Archambault, *Barnyard Dance,* Henry Holt, 1986.
Martin, Patricia Miles, *The Pumpkin Patch,* G. P. Putnam's Sons, 1966.
Merrill, Claire, *A Seed Is a Promise,* Scholastic, 1973.
The Metropolitan Museum of Art, in association with the Buffalo Bill Historical Center, commentary by Dan Fox, *Songs of the Wild West,* Simon & Schuster, 1991.
Miller, Jane, *Farm Alphabet Book,* Scholastic, 1987.
Miller, Jane, *Farm Noises,* Simon & Schuster Books for Young Readers, 1989.
Miller, Jane, *Seasons on the Farm,* Prentice-Hall, 1986.
Mitgutsch, Ali, *From Grass to Butter,* Carolrhoda, 1981.
Mitsumasa, Anno, *Anno's Counting Book,* Harper Collins, 1987.
Mitsumasa, Anno, *Anno's Journey,* Philomel, 1978.
Modesitt, Jeanne, *Vegetable Soup,* Macmillan, 1988.
Morris, Linda L., *Morning Milking,* Picture Book Studio, 1991.
Myers, Christopher, *McCrephy's Field Normand,* Houghton-Mifflin, 1991.
Nicola-Lisa W., *Night Is Coming,* Dutton, 1991.
Noble, Trinka Hakes, *The Day Jimmy's Boa Ate the Wash,* Dial, 1980.
Orlowsky, Wallace and Thomas Biddle Perera, *Who Will Wash the River?* Coward, McCann & Geoghegan, 1970.
Overbeck, Cynthia, *Curly the Piglet,* Carolrhoda, 1976.
Paladino, Catherine, *Our Vanishing Farm Animals: Saving America's Rare Breeds,* Little, Brown, 1991.
Paladino, Catherine, *A Day of Sheepshearing,* Little, Brown, 1990.
Pallazzo, *Golden Girl,* Garrard, 1963.
Pallottaa, Jerry, *Flower Alphabet Book,* Charlesbridge, 1986.
Paris, Pat, *Old McDonald Had a Farm,* Barron's, 1991.
Parker, Nancy Winslow, and Joan Richards Wright, *Bugs,* Mulberry, 1987.
Parramon, J.M., *My First Visit to a Farm,* Barron's, 1990.
Patent, Dorothy Hinshaw, *Farm Animals,* Holiday House, 1984.
Patent, Dorothy Hinshaw, *Wheat, the Golden Harvest,* Dodd, Mead and Co., 1987.
Paterson, Katherine, *The Tale of the Mandarin Ducks,* Scholastic, 1990.
Pearce, Q.L., and W. J. Pearce, *Nature's Footprints in the Barnyard,* Silver-Burdett, 1990.
Peinick, H., and Nancy Sears, *Farm Animals,* Random House, Inc., 1977.
Pellowski, Michael J., *Copycat Dog,* Troll Associates, 1986.
Pellowski, Michael J., *What It's Like to Be a Forest Ranger,* Troll Associates, 1989.
Peppin, *The Usborne Story of Painting,* EDC, 1988.
Perrault, Charles, *Sleeping Beauty and The Soldier and the Six Giants,* Upside Down Books, EDC, 1989.
Peterson, John, *Tom Little's The Great Halloween Scare,* Scholastic, 1975.
Polacco, Patricia, *Just Plain Fancy,* A Bantam Little Rooster Book, 1990.
Posell, Elsa, *Horses,* Children's Press, 1981.
Poskanzer, Susan Cornell, *What's It Like to be a Dairy Farmer?* Troll Associates, 1989.
Poth, Cathy, *The Earth,* Silver-Burdett, 1989 (adapted from original French text by Pierre Averous).
Potter, Tessa, and Donna Bailey, *Chickens and Eggs,* My World Books, Red Level, Steck-Vaughn, 1990.
Potter, Tessa, *Chickens on the Farm,* My World Books, Steck-Vaughn, 1990.
Potter, Tessa, and Donna Bailey, *Cows,* Steck-Vaughn, 1990.
Potter, Tessa, *Cows on the Farm,* My World Books, Red Level, 1B, Steck-Vaughn, 1990.
Powers, Joan, *The Story of Peter Rabbit,* Checkerboard, 1988.
Pryor, Bonnie, *Greenbrook Farm,* Simon & Schuster Books for Young Readers, 1991.
Quackenbush, Robert, *Sherlock Chick and the Peekaboo Mystery,* Parents Magazine, 1987.
Ravilious, Robin, *Two in a Pocket,* Little, Brown, 1991.

Redhead, Janet Slater, *The Turkeygobbling Frog Show,* Steck-Vaughn, 1989.
Richards, Norman, *Tractors, Plows and Harvesters,* Doubleday, 1978.
Rius, Maria, *Life On the Land,* Barron's, 1987.
Rockwell, Anne, *Apples and Pumpkins,* Macmillan, 1989.
Ross, Catherine and Susan Wallace, *The Amazing Milk Book,* Addison-Wesley, 1991.
Ryder, Joanne, *Hello Tree,* Lodestar Books, 1991.
Sabin, Louis, *Plants, Seeds and Flowers,* Troll Associates, 1985.
Salmon, Michael, *Who's Behind the Door? At the Farm,* Steck-Vaughn, 1990.
San Souci, Robert D., *The Talking Eggs,* Scholastic, 1989.
Sanchez, Isidro, and Carme Peris, *Forest,* Barron's, 1991.
Sanchez, Isidro, and Carme Peris, *Garden,* Barron's, 1991.
Sanchez, Isidro, and Carme Peris, *Orchard,* Barron's, 1991.
Santrey, Laurence, *Conservation and Pollution,* Troll Associates, 1985.
Santrey, Laurence, *Lakes and Ponds,* Troll Associates, 1985.
Santrey, Laurence, *Summer: Discovering the Seasons,* Troll Associates, 1983.
Schmidt, Karen, *The Gingerbread Man,* Scholastic, 1985.
Schnieper, Claudia, *An Apple Tree Through the Year,* Carolrhoda, 1989.
Scott, J.D., *The Book of the Pig,* Putnam, 1981
Selsam, Millicent E., *More Potatoes!* Harper & Row, 1972.
Shaw, Nancy, *Sheep in a Jeep,* Houghton-Mifflin, 1986.
Shaw, Nancy, *Sheep in a Shop,* Houghton-Mifflin, 1991.
Showers, Paul, *What Happens to a Hamburger?,* Harper Trophy, 1985.
Siebert, Diane, *Heartland,* Harper Row, 1989.
Sills, Leslie, *Inspirations,* A. Whitman, 1989.
Sipherd, Ray, *Down on the Farm with Grover,* Golden, 1980.
Smith, Boyd, *Farm Book,* Houghton-Mifflin, 1990.
Smith, Kathie Billingslea, and Victoria Crenson, *Touching,* Troll, 1988.
Stephen, R.J., *Farm Machinery,* Franklin Watts, 1986.
Stephen, R. J., *Picture Library Farm Machinery,* Franklin Watts, 1986.
Stephen, Richard, *Rivers,* Troll Associates, 1990.
Stevens, Janet (illus.), *It's Perfectly True!* Holiday House, 1988 (adapted from Hans Christian Andersen.)
Stidworthy, John, *Flowers, Trees and Other Plants,* Random House, 1991.
Stiles, *Kate of Still Waters,* Macmillan, 1991.
Stoll, Ellen, *Mouse Paint,* Walsh, Harcourt, Brace, 1991.
Stone Soup and Other Stories, New Way Learning with Literature, Violet Level, Steck-Vaughn, 1987.
Tafuri, Nancy, *Have You Seen My Duckling?* Greenwillow, 1984.
Taylor, Mildred D., *Song of the Trees,* Bantam, 1988.
Thayer, Jane, *The Popcorn Dragon,* Morrow Junior Books, 1953.
Titherington, Jeanne, *Pumpkin, Pumpkin,* Mulberry, 1986.
Tresselt, Alvin, *Sun Up,* Lothrop, Lee & Shepard, 1991.
Tresselt, Alvin, *Wake Up, FARM!* Lothrop, Lee & Shepard, 1991.
Tyler, J. and S. Stitt, *Mealtime Words,* EDC, 1989.
Udry, Janice May, *A Tree is Nice,* Harper & Row, 1956.
Van Allsburg, Chris, *Stranger,* Houghton-Mifflin, 1988.
Van Allsburg, Chris, *Two Bad Ants,* Houghton-Mifflin, 1988.
Van Leeuwen, J., *Tales of Amanda Pig and Her Big Brother Oliver,* 1983, Dial Books for Young Readers.
Venezia, Mike, *Da Vinci,* Children's Press, 1989.
Venezia, Mike, *Monet,* Children's Press, 1990.
Venezia, Mike, *Picasso,* Children's Press, 1988.
Venezia, Mike, *Rembrandt,* Children's Press, 1988.

Venezia, Mike, *Van Gogh*, Children's Press, 1988.
Walker, Lois, *Get Growing!* John Wiley & Sons, 1990.
Watts, Barrie, *Bean and Plant*, Simon & Schuster, 1987.
Watts, Barrie, *Butterfly and Caterpillar*, Silver-Burdett, 1987.
Watts, Barrie, *Chicken and Egg*, Silver-Burdett, 1987.
Watts, Barrie, *Potato*, Silver-Burdett, 1987.
Watts, Barrie, *Tomato*, Silver-Burdett, 1987.
Watts, Franklin, *Wheat*, Children's Press, 1977.
Watson, Clyde, and Wendy Watson, *Applebet: An ABC Book*, Farrar, Strauss and Biroux, 1982.
Webster, Vera R., *Plant Experiments*, Children's Press, 1982.
White, E. B., *Charlotte's Web*, Harper, 1954.
Whitehead, Pat, *Let's Go to the Farm: ABC Adventures*, Troll Associates, 1985.
Wilhelm, Hans, *Oh, What a Mess*, Weekly Reader, 1988.
Wilkes, Angela, *Growing Things*, EDC, 1984.
Wilkes, Angela, *My First Green Book*, Random House, 1991.
Wilkes, Angela, *My First Nature Book*, Random House, 1991.
Williams, Garth, *Baby Farm Animals*, A Golden Book, 1958.
Wiseman, Ann Sayre, *Fingerpaint and Pudding Prints*, Addison-Wesley, 1980.
Wyler, Rose, *Science Fun With Peanuts and Popcorn*, Julian Messner, 1986.
Yenawine, Philip, *Colors*, Delacorte, 1991.
Yenawine, Philip, *Lines*, Delacorte, 1991.
Yenawine, Philip, *Shapes*, Delacorte, 1991.
Yenawine, Philip, *Stories*, Delacorte, 1991.
Yolen, Jane, *Ring of Earth: A Child's Book of Seasons*, Harcourt, Brace, Jovanovich, 1986.
Yoshi, *1,2,3*, Picture Book Studio, 1990.
Ziegler, Sandra, *A Visit to the Dairy Farm*, Children's Press, 1987.

Additional Resources

American Egg Board, P.O. Box 858, Park Ridge, IL 60068-0858.

American Farm Bureau Federation, Agriculture in the Classroom, 225 Touhy Ave., Park Ridge, IL 60068, (312) 399-5764.
"Agriculture in the Classroom Sourcebook," 1991 (a reference guide to educational programs).

American Forestry Association, P.O. Box 2000, Washington, D.C. 20013.
Hunting for Big Trees, National Register of Big Trees.

American Quilter's Society, P.O. Box 3290, Paducah, KY 42002-3290.

American Sheep Industry, 6911 South Yosemite St., Englewood, CO 80112-1414, (303) 771-3500.

American Shorthorn Society, P.O. Box 449, Beloit, WI 53511.
"Milking Shorthorns: The Nation's Most Improved Dairy Breed," (four-page brochure, free).

American Wool Council, Wool Education Center, 200 Clayton St., Denver, CO 80206

Associated Milk Producers, Inc., 1700 N. Sooner Rd., Oklahoma City, OK 73111.

Associated Milk Producers, Inc., 6240 E. 15, Tulsa, OK 74112, (918) 835-6933.

"Healthy Choices: Balanced Meals" (free nutrition unit for grade 2).
"Nutrition Unit: Big Ideas, Secrets of Success" (free nutrition unit for grades 4-5).

Barbara Bannister, 1925 SE Taggart, Portland OR 97202-2252
"Teaching Scientific Things . . . Like Eggs" (a book of simple activities to teach the science of eggs, $17).

Bureau of Land Management, Forest Service, P.O. Box 7469, Bend, OR 97708-7469
"Animal Inn," (information on the uses of trees.)

California Egg Commission, 1150 N. Mountain Ave., Suite 14, Upland, CA 91786.

California Foundation for Ag in the Classroom, 1601 Expedition Blvd. Sacramento, CA 95815. (free, six-page newsletter containing resources and activities for the classroom.)

California Milk Advisory Board, Communications Services, P.O. Box 4680, Modesto, CA 95352 (free dairy lesson plans and posters for grades K-3).

Common Ground Garden Program, 2615 S. Grand Ave., Suite 400, Los Angeles, CA 90007.
Children's Gardens: A Field Guide for Teachers, Parents and Volunteers (a gardening manual, $10, plus $2.50, shipping. Make checks payable to LA Harvest.)

Department of Water Resources, 1416 N. St., Room 338, P.O. Box 942836, Sacramento, CA 94236, (916)445-9371.
"Peter's magical Water Journey" (flannel board story with scripts and directions for making characters.
"Water Play" (booklet with facts and activities about water).

Division of Agricultural Sciences and Natural Resources, Oklahoma State University, 136 Ag Hall, OSU, Stillwater, OK 74078. (Attn: Department desired.)

Domeier, Shirley A., Rt. 2, Box 77, New Ulm, MN 56073.
"Happiness is a Cow," "Happiness is a Cow II," "Happiness is a Beef Cow" (24-page coloring books, 50 cents each, with a minimum order of 20).

The Fertilizer Institute, 501 2nd St., NE, Washington, D. C. 20002
"Agri-Balance: Not a Drop to Drink?" (VHS videotape about agriculture's impact on groundwater, free loan).

The Garden Club of America, Conservation Office, 598 Madison Ave., New York, NY 10022.
"The World Around You" (free environmental packet for grades 3-6, dealing with water quality and plants,

General Feed and Seed/Let's Get Growing, 1900-B Commercial Way, Santa Cruz, CA 94065
The Growing Classroom: Teacher's Guide to Activities ($33.75, plus $4 shipping).

Good Apple Catalog, 1204 Buchanan St., Box 299, Carthage, IL 62321-0299, 1-800-435-7234 farm animals poster (GA1371), 25 for $6.25, additional quantities, 25 cents each.
"My Very Own Poster for Counting Money" (25 for $6.25).

A Green America Co., P.O. Box 1028, Pagosa Springs, CO 81147, (303) 264-2286

"Wee Sprout Package: Growing Sprouts in Water," (special package for educators, including growing jar, 16-page story book and sprout mixture, $2 per kit, 40 cents for seed refills, minimum order of one dozen).

Heartsoft
"Coin Changer," (Apple IIe software for grades K-5. Teaches children how to count and use money.)

Illinois Farm Bureau, Field Services Division, 1701 Towanda Ave., Bloomington, IL 61701
"My Family Farm" (bulletin board kit for grades 1-3, $4.75).

Kansas Foundation for Ag in the Classroom, Bluemont 124, Kansas State University, Manhattan, KS 66506
"Wheat: Field to Oven" (26-page student activity book, with background materials for teachers, $5).

Mabel C. Fry Public Library, 500 W. Main, Yukon, OK 73099 (Sue Kilmer, librarian).

Mississippi Farm Bureau Federation, P. O. Box 1972, Jackson, MS 39215-1972 (free 10-page activity unit for grades K-1, one per teacher).

National Cattlemen's Association, 5420 S. Quebec St., Englewood, CO 80155
"Twelve Myths and Facts," (videotape for grades 1-3 and 4-6, $15).

National Cotton Council of America, P.O. Box 12285, Memphis, TN 38182 (901)274-9030.

National Dairy Council, 6300 N. River Rd., Rosemont, IL 60018-4233, Order Dept., (708) 696-1860, ext. 220.
"Nutrition Unit: Food Helps Me Grow" (1st grade nutrition unit, $35, order # 0891N).
"Nutrition Unit: Food in America" (4th grade nutrition unit, $35, order # 0894N).
"Nutrition Unit: Food Keeps Me Healthy" (3rd grade nutrition unit, $35, order # 0893N).

National Farmers' Union, Education Department, P.O. Box 2251, Denver, CO 80251.
"Happiness is Being a Farm Family."

National FFA Supply Service, 5632 Mt. Vernon Memorial Highway, Alexandria, VA 22309.
"Food for America" (teaching guide, with activities, $7.50 per kit).

National Gardening Association, 180 Flynn Ave., Burlington, VT 05401
Growlab: A Complete Guide to Gardening in the Classroom (128-page softbound teacher's book, with reproducibles, $14.95, plus $3 shipping).

National Livestock and Meat Board, Barbara Hicks Selover, director, Education Department, 444 N. Michigan Ave., Chicago, IL 60611
"Food Power Tower" (nutrition program designed for students in K-1 $2.00)
"The Case of the Purloined Pork" (2nd grade teaching kit includes hardbound story book, blackline masters, 2 posters. $15.00)
"Murchster's Nutrition Program" ($5 kit for grades K-1. Send request on school letterhead.)

National Museum of Natural History, Publications Division, Smithsonian Institution, Washington, D. C. 20560.
"Good as Gold" (poster featuring 80 different foods of American origin that are available in food stores in the U. S. today, $6 each).

National Peanut Council, 101 S. Peyton Street, Ste. 301, Alexandria, VA 22314, (703) 838-9500.

Nebraska Corn Board, 301 Centennial Mall South, P.O. Box 95107, Lincoln, NE 68509.
"Color It Corn" (23-page coloring book for grades 1-4, one copy free, with permission to photocopy).

Nebraska Hereford Auxiliary, c/o Meneda Phifer, Rt. 1, Mason City, NE 63355
"Our Friend Herfy," (32-page storybook for preschool and K-3, $4, plus 90 cents for postage and handling).

New England Sprout Growers Association, P.O. Box 270, Marion, MA 02738, (508) 763-2577.
(free activity sheets on sprouts for grades K-6).

New York Ag in the Classroom, Cornell University, 111 Kennedy Hall, Ithaca, NY 14853
"How a Tree Grows" (poster, $2.50).
"New York State Arbor Day," (eight-panel brochure for teacher reference, with suggestions for community involvement and environmental activities, 25 cents)
pizza poster, $2.50

North Dakota State Water Commission, Dennis Nelson, WET Program Coordinator, 900 E. Blvd., Bismarck, ND 58505
"Water is Our Best Friend (hands-on activity guide introducing water to children).

Oklahoma Beef Industry Council, 5101 N. Classen, Ste. 210, Oklahoma City, OK 73118, (405)840-3777.
"Beef from the Farm to You" (coloring book).
"Heart Healthy Diet" (brochure).

Oklahoma Cattlemen's Association, 2500 Exchange, Oklahoma City, OK 73108, (405)235-4391.
"Myths and Facts about Beef"

Oklahoma Cattlewomen's Association, Attn. Marilyn Whetsell, Rt. 1, Box 174, Pawhuska, OK 74056.

Oklahoma Conservation Commission, Brenda Wiser, Education Cordinator, 2800 N. Lincoln Blvd., Oklahoma City, OK 73105.
"Project Learning Tree" (activity guide using forests and natural resource concepts, training required).

Oklahoma Cooperative Extension Service, (see listings under county government for the office serving your county.)
Education Programs in Agriculture, 4-H, Home Economics, and Rural Development.

Oklahoma Department of Wildlife Conservation, Luann Waters, Conservation Education, 1801 N. Lincoln, Oklahoma City, OK 73105.
"Project WILD" (activity guide using wildlife and natural resource concepts, training required.)
"Aquatic Project WILD" (activity guide for teaching water training required for teachers.)

Oklahoma Egg Council, Attn. Dr. Joe Berry, 201 Animal Science Dept. OSU, Stillwater, OK 74078-0425.

Oklahoma Farm Bureau, 2501 N. Stiles, Oklahoma City, OK 73105-3196.

Oklahoma Farmers Union, 1141 W. Sheridan, Oklahoma City, OK 73124

Oklahoma Forestry Division/State Department of Agriculture.
"Forest Trees of Oklahoma, How to Know Them," Publication No. 1, revised edition, No. 13,

"Project Learning Tree" (activity guide using forests and natural resource concepts, training required.)

Oklahoma Peanut Commission, Box D, Madill, OK 73446.

Oklahom Pork Council, Attn. Dutch Miller, Rt. 1 Box 251, Depew, OK 74028.

Oklahoma Sheep and Wool Producers Inc., Attn. Don Chandler, Rt. 2, Box 175, Watonga, OK 73772.

Oklahoma State University, Division of Agricultural Sciences and Natural Resources, 136 Ag Hall, OSU, Stillwater, OK 74078. (Attn: Department desired.)

Oklahoma Water Resources Board, P. O. Box 150, Oklahoma City, OK 73101-0150.

Oklahoma Wheat Commission, 800 N.E. 63rd, Oklahoma City, OK 73105

Oregon Women for Agriculture, 3472 Howe-Prairie Rd, Silverton, OR 97381
"Whatever Happened to Old MacDonald's Farm," (16-page activity coloring book, 25 cents per copy).

Outdoor Products and Programs, P.O. Box 1492, Oxford, MS.
"Nature Study Replicas" (Write for information and a catalogue).

The Popcorn Institute, 111 E. Wacker Dr., Ste. 600, Chicago, IL 60601
(free popcorn teaching gude for grades 1-3 and 4-6, including nutritional information and the history of popcorn. Send 45 cents and an eight- by 12-inch self-addressed stamped envelope.)

Right On Programs, 755 New York Ave., Huntington, NY 11743.
"Farm Life" (Apple or Commodore software disk, $25, plus $4 for handling).

Stage Fright Productions, P.O. Box 373, Geneva, IL 60134 (VHS tape, $16.95).
"Farm Animals, Close Up and Very Personal."

Troll Associates, 320, Rt. 17, Mahwah, NJ 07430.
The Case of the Missing Chick (computer disc, with book, designed for Apple II, II+, IIe and IIc).

U.S. Department of Agriculture Yearbook
"A Glossary of Farm Terms," May, 1988.
"What's to Eat," 1979.

Yarnhill County Women for Agriculture, P.O. Box 101, Dayton, OR 97114
"The Great Green Bean," (videotape, $12.08).

Concepts for Oklahoma Ag in the Classroom

Oklahoma Ag in the Classroom is designed to address the following basic concepts about agriculture through integration of lessons into the ongoing school curriculum. The lessons are an enriched way of reaching *Oklahoma State Competencies*, using agricultural subject matter to teach core areas. The concepts listed here are the areas which the agricultural community feels every student should have some knowledge of in order to be an informed and "ag-literate" citizen.

Agriculture is defined here as the entire process of providing food and fiber - from cultivation of fields to the final retailing of animal and crop products.

I A basic awareness of agriculture, what it entails and how it relates to everyone's needs for food and fiber.

II The place of agriculture in the society and the interdependence of society and the agriculture economy.

III The social system that surrounds an agricultural community including history and cultural significance.

IV The importance of soil, water, air, and solar energy to the agriculture industry and the interrelationship of agriculture with the environment.

V The place of science in the production of food and fiber.

VI The many occupations that are related to the production, processing, and distribution of food and fiber.

Lessons by Commodity

Beef

BEEF - FROM FARM TO TABLE ..... R 3
BEEF IS GOOD FOR YOU ..... S 26
DO ANIMALS POLLUTE...? ..... S 27
HAMBURGER HUNT ..... VA 10
MEAT WE EAT ..... S 1
MEET GRADY THE COW ..... R 2
MOO'S WEIGHT ..... M 17
MOO...SAID GRADY THE COW ..... VA 11
OFF TO WORK ..... SS 6
THIS IS A COW ..... LA 11
WHERE'S THE BEEF? ..... S 34
DAIRY OR BEEF? ..... S 17

Careers

I'M A FARMER. I'M A RANCHER. ..... SS 3

Cotton

THE COTTON SYMBOL ..... M 10

Dairy

COUNT THE COWS ..... M 9
DELICIOUS DAIRY ..... LA 6
DIPPING INTO DAIRY ..... M 11
HAVE YOU THE TIME OF DAY? ..... IS 5
THE MILK ROUTE ..... IS 8
THE REAL SEAL ..... M 5
THE STORY OF MILK ..... IS 3

Entomology

COMMON KINDS OF INSECTS ..... S 16

General Farm Animals

ANIMAL NAMES ..... S 11
BABY ANIMALS TO COUNT ..... M 1
COUNT THE ANIMALS ..... M 2
FIND THE FARM ANIMALS ..... IS 4
MADE FROM ANIMALS ..... S 20
SHORT STORIES ..... IS 6
WE FURNISH YOUR FOOD ..... S 33
WHO'S WHO ..... S 24

Foods

FOOD GROUPS ..... S 28
HEALTHY DECISIONS ..... S 29
OUR BASIC FOODS ..... S 2
PIZZA PARTS ..... S 30

Forestry

A TALL TIMBER TALE ..... VA 7
FROM SEED TO TREE ..... LA 14
OKLAHOMA FORESTS ..... SS 7
THE RIGHT SIZE ..... M 6
TREE PARTS ..... R 6

Horticulture

BEANS IN A BAG ..... IS 1
CARROT BASKETS ..... S 15
GET GROWING ..... IS 2
GROWING GRAPHS ..... M 15
HOW SEEDS ARE SCATTERED ..... S 19
MIXED-UP MARKERS ..... LA 13
PLANT PARTS WE EAT ..... S 21
PLANTS LOVE AIR ..... S 4
POP AROUND THE WORLD ..... SS 8
POTATO PRINTS ..... VA 3
POWERFUL POTATO ..... S 5
PUMP UP WITH POPCORN ..... S 31
PUMPKIN FACES ..... M 4
PUMPKINS BY THE POUND ..... M 22
READY, SET, PLANT! ..... S 6
SAND AND SUNFLOWERS ..... VA 4
SEED SEARCH ..... S 7
SEEDLINGS ..... M 19
SEEDS - SEE HOW THEY GROW ..... S 8
SEEDS FOR THE SEASON ..... SS 1
SEEDS WE EAT ..... R 5
SOMETHING'S HIDING INSIDE ..... IS 9
SPROUTING ..... IS 7
TATER TOTS ..... M 20
TOMATO PLANT PARTS ..... S 22

Miscellaneous or Multiple

A PURPLE COW ..... VA 1
ABC FARM ..... LA 9
AG - WHAT IS IT? ..... LA 1
AG MATH ..... M 12
AG PUZZLES ..... VA 8
COLORS ON THE FARM ..... LA 4
COUNT ME IN ..... M 8
FACE YOUR FEELINGS ..... SS 5
FARM ALPHABET ..... LA 7
FARM TALK ..... LA 8
I LIKE IT! ..... VA 13
LINES IN NATURE ..... VA 3
LISTEN AND LEARN ..... LA 2
LISTENING TO DIRECTIONS ..... LA 3
LIVING OR NONLIVING ..... S 12
MATCH THE SHAPES ..... M 16
MY FARM FRIEND ..... R 4
OKLAHOMA FARM COLORS ..... SS 2
RANCH AND FARM BOOKLETS ..... LA 10
TIME TO EAT ..... M 21
WHICH ONE IS DIFFERENT? ..... VA 5

Peanuts

BABY PEANUT PLANTS ..... S 25
PEANUT BUTTER AND... ..... S 3
PEANUT PATCH ..... M 18

Pecans

PECAN FINGER PRINTS ..... SS 4

Poultry

CHECK YOUR CHICKS ..... LA 5
EGG MAZE: COUNTING BY TWOS, THREES AND FIVES ..... M 14
EGG-CITING NUMBERS ..... M 3
FLUFFY FEATHERS ..... S 10

HOME, SWEET NEST ..... S 18
WHICH CAME FIRST, THE CHICKEN OR THE EGG? ..... LA 12
WHO'S IN THE HEN HOUSE? ..... VA 9

Soils
IS IT JUST DIRT? ..... S 13

Swine
FIVE PLUMP PIGS ..... M 7

Water
THE WONDERFUL WATER CYCLE ..... S 32
WATER - WHAT'S ITS MATTER? ..... R 7

Wheat
A CHANGE OF SEASON ..... S 14
DOLLARS AND CENTS ..... M 13
WHAT HAPPENED? ..... R 1

Wool
THE WOOL SYMBOL ..... S 9
WEAVING WOOL ..... VA 12
WET AND WOOLY ..... S 23
WONDERS OF WOOL ..... VA 6

Lessons by Ag in the Classroom Concept

Concept I

ABC FARM ..... LA 9
AG - WHAT IS IT? ..... LA 1
AG MATH ..... M 12
ANIMAL NAMES ..... S 11
BABY ANIMALS TO COUNT ..... M 1
BABY PEANUT PLANTS ..... S 25
BEEF IS GOOD FOR YOU ..... S 26
CHECK YOUR CHICKS ..... LA 5
COLORS ON THE FARM ..... LA 4
COUNT ME IN ..... M 8
COUNT THE ANIMALS ..... M 2
DELICIOUS DAIRY ..... LA 6
EGG MAZE: COUNTING BY TWOS, THREES AND FIVES ..... M 14
EGG-CITING NUMBERS ..... M 3
FARM ALPHABET ..... LA 7
FIND THE FARM ANIMALS ..... IS 4
FIVE PLUMP PIGS ..... M 7
GROWING GRAPHS ..... M 15
HAMBURGER HUNT ..... VA 10
HEALTHY DECISIONS ..... S 29
LISTEN AND LEARN ..... LA 2
LISTENING TO DIRECTIONS ..... LA 3
MEAT WE EAT ..... S 1
MIXED-UP MARKERS ..... LA 13
MOO...SAID GRADY THE COW ..... VA 11
OKLAHOMA FARM COLORS ..... SS 2
OUR BASIC FOODS ..... S 2
PEANUT BUTTER AND ..... S 3
PEANUT PATCH ..... M 18
SEED SEARCH ..... S 7
SEEDLINGS ..... M 19
SEEDS WE EAT ..... R 5
SHORT STORIES ..... IS 6
THE WOOL SYMBOL ..... S 9
THIS IS A COW ..... LA 11
TIME TO EAT ..... M 21
TOMATO PLANT PARTS ..... S 22
WE FURNISH YOUR FOOD ..... S 33
WHICH CAME FIRST, THE CHICKEN OR THE EGG? ..... LA 12
WHICH ONE IS DIFFERENT? ..... VA 5
WHO'S IN THE HEN HOUSE? ..... VA 9
WHO'S WHO ..... S 24
WONDERS OF WOOL ..... VA 6

Concept II

COUNT THE COWS ..... M 9
DAIRY OR BEEF? ..... S 17
DOLLARS AND CENTS ..... M 13
HAVE YOU THE TIME OF DAY? ..... IS 5
MOO'S WEIGHT ..... M 17
PUMPKINS BY THE POUND ..... M 22
RANCH AND FARM BOOKLETS ..... LA 10
THE COTTON SYMBOL ..... M 10
THE MILK ROUTE ..... IS 8
THE RIGHT SIZE ..... M 6

Concept III

MATCH THE SHAPES ..... M 16
MEET GRADY THE COW ..... R 2
MY FARM FRIEND ..... R 4
OKLAHOMA FORESTS ..... SS 7
PECAN FINGER PRINTS ..... SS 4
POP AROUND THE WORLD ..... SS 8
POTATO PRINTS ..... VA 3
PUMPKIN FACES ..... M 4
SAND AND SUNFLOWERS ..... VA 4
SEEDS FOR THE SEASON ..... SS 1
TATER TOTS ..... M 20
THE STORY OF MILK ..... IS 3
WEAVING WOOL ..... VA 12
WHAT HAPPENED? ..... R 1

Concept IV

DO ANIMALS POLLUTE...? ..... S 27
FLUFFY FEATHERS ..... S 10
FROM SEED TO TREE ..... LA 14
IS IT JUST DIRT? ..... S 13
PLANTS LOVE AIR ..... S 4
SEEDS - SEE [illegible]OW THEY GROW ..... S 8
SOMETHING'S HIDING INSIDE ..... IS 9
THE WONDERFUL WATER CYCLE ..... S 32
WATER - WHAT'S ITS MATTER? ..... R 7
WET AND WOOLY ..... S 23

Concept V

A CHANGE OF SEASON ..... S 14
BEANS IN A BAG ..... IS 1
BEEF - FROM FARM TO TABLE ..... R 3
CARROT BASKETS ..... S 15
COMMON KINDS OF INSECTS ..... S 16
DIPPING INTO DAIRY ..... M 11
FOOD GROUPS ..... S 28
GET GROWING ..... IS 2
HOME, SWEET NEST ..... S 18
HOW SEEDS ARE SCATTERED ..... S 19
LIVING OR NONLIVING ..... S 12
MADE FROM ANIMALS ..... S 20
PIZZA PARTS ..... S 30
PLANT PARTS WE EAT ..... S 21
POWERFUL POTATO ..... S 5
PUMP UP WITH POPCORN ..... S 31
READY, SET, PLANT! ..... S 6
SPROUTING ..... IS 7
THE REAL SEAL ..... M 5
TREE PARTS ..... R 6
WHERE'S THE BEEF? ..... S 34

Concept VI

FARM TALK ..... LA 8
I'M A FARMER. I'M A RANCHER. ..... SS 3
OFF TO WORK ..... SS 6
A PURPLE COW ..... VA 1
A TALL TIMBER TALE ..... VA 7
AG PUZZLES ..... VA 8
FACE YOUR FEELINGS ..... SS 5
I LIKE IT! ..... VA 13
LINES IN NATURE ..... VA 3

Lessons by Grade Level

Grades K - 2

A PURPLE COW ..... VA 1
AG - WHAT IS IT? ..... LA 1
BABY ANIMALS TO COUNT ..... M 1
BEANS IN A BAG ..... IS 1
COUNT THE ANIMALS ..... M 2
EGG-CITING NUMBERS ..... M 3
GET GROWING ..... IS 2
LINES IN NATURE ..... VA 3
LISTEN AND LEARN ..... LA 2
LISTENING TO DIRECTIONS ..... LA 3
MEAT WE EAT ..... S 1
OUR BASIC FOODS ..... S 2
PEANUT BUTTER AND... ..... S 3
PLANTS LOVE AIR ..... S 4
POTATO PRINTS ..... VA 3
POWERFUL POTATO ..... S 5
PUMPKIN FACES ..... M 4
READY, SET, PLANT! ..... S 6
SAND AND SUNFLOWERS ..... VA 4
SEED SEARCH ..... S 7
SEEDS - SEE HOW THEY GROW ..... S 8
SEEDS FOR THE SEASON ..... SS 1
THE REAL SEAL ..... M 5
THE RIGHT SIZE ..... M 6
THE WOOL SYMBOL ..... S 9
WHAT HAPPENED? ..... R 1

Grade K

COLORS ON THE FARM ..... LA 4
FIVE PLUMP PIGS ..... M 7
FLUFFY FEATHERS ..... S 10
WHICH ONE IS DIFFERENT? ..... VA 5
WONDERS OF WOOL ..... VA 6

Grades K - 1

A TALL TIMBER TALE ..... VA 7
AG PUZZLES ..... VA 8
ANIMAL NAMES ..... S 11
COUNT ME IN ..... M 8
COUNT THE COWS ..... M 9
LIVING OR NONLIVING ..... S 12
MEET GRADY THE COW ..... R 2
OKLAHOMA FARM COLORS ..... SS 2
THE COTTON SYMBOL ..... M 10
WHO'S IN THE HEN HOUSE? ..... VA 9

Grade 1

CHECK YOUR CHICKS ..... LA 5
DELICIOUS DAIRY ..... LA 6
DIPPING INTO DAIRY ..... M 11
FARM ALPHABET ..... LA 7
FARM TALK ..... LA 8
HAMBURGER HUNT ..... VA 10
IS IT JUST DIRT? ..... S 13
THE STORY OF MILK ..... IS 3

Grades 1 - 2

A CHANGE OF SEASON ..... S 14
ABC FARM ..... LA 9
AG MATH ..... M 12
CARROT BASKETS ..... S 15
COMMON KINDS OF INSECTS ..... S 16
DAIRY OR BEEF? ..... S 17
DOLLARS AND CENTS ..... M 13
EGG MAZE: COUNTING BY TWOS, THREES AND FIVES ..... M 14
FIND THE FARM ANIMALS ..... IS 4
GROWING GRAPHS ..... M 15
HAVE YOU THE TIME OF DAY? ..... IS 5
HOME, SWEET NEST ..... S 18
HOW SEEDS ARE SCATTERED ..... S 19
I'M A FARMER. I'M A RANCHER. ..... SS 3
MADE FROM ANIMALS ..... S 20
MATCH THE SHAPES ..... M 16
MOO'S WEIGHT ..... M 17
MOO...SAID GRADY THE COW ..... VA 11
PEANUT PATCH ..... M 18
PECAN FINGER PRINTS ..... SS 4
PLANT PARTS WE EAT ..... S 21
RANCH AND FARM BOOKLETS ..... LA 10
SEEDLINGS ..... M 19
SHORT STORIES ..... IS 6
SPROUTING ..... IS 7
TATER TOTS ..... M 20
THE MILK ROUTE ..... IS 8
THIS IS A COW ..... LA 11
TIME TO EAT ..... M 21
TOMATO PLANT PARTS ..... S 22
WEAVING WOOL ..... VA 12
WET AND WOOLY ..... S 23
WHICH CAME FIRST, THE CHICKEN OR THE EGG? ..... LA 12
WHO'S WHO ..... S 24

Grade 2

BABY PEANUT PLANTS ..... S 25
BEEF - FROM FARM TO TABLE ..... R 3
BEEF IS GOOD FOR YOU ..... S 26
DO ANIMALS POLLUTE...? ..... S 27
FACE YOUR FEELINGS ..... SS 5
FOOD GROUPS ..... S 28
FROM SEED TO TREE ..... LA 14
HEALTHY DECISIONS ..... S 29
I LIKE IT! ..... VA 13
MIXED-UP MARKERS ..... LA 13
MY FARM FRIEND ..... R 4
OFF TO WORK ..... SS 6
OKLAHOMA FORESTS ..... SS 7
PIZZA PARTS ..... S 30
POP AROUND THE WORLD ..... SS 8
PUMP UP WITH POPCORN ..... S 31
PUMPKINS BY THE POUND ..... M 22
SEEDS WE EAT ..... R 5
SOMETHING'S HIDING INSIDE ..... IS 9
THE WONDERFUL WATER CYCLE ..... S 32
TREE PARTS ..... R 6
WATER - WHAT'S ITS MATTER? ..... R 7
WE FURNISH YOUR FOOD ..... S 33
WHERE'S THE BEEF? ..... S 34

Lessons by Title

A CHANGE OF SEASON	S	14
A PURPLE COW	VA	1
A TALL TIMBER TALE	VA	7
ABC FARM	LA	9
AG - WHAT IS IT?	LA	1
AG MATH	M	12
AG PUZZLES	VA	8
ANIMAL NAMES	S	11
BABY ANIMALS TO COUNT	M	1
BABY PEANUT PLANTS	S	25
BEANS IN A BAG	IS	1
BEEF - FROM FARM TO TABLE	R	3
BEEF IS GOOD FOR YOU	S	26
CARROT BASKETS	S	15
CHECK YOUR CHICKS	LA	5
COLORS ON THE FARM	LA	4
COMMON KINDS OF INSECTS	S	16
COUNT ME IN	M	8
COUNT THE ANIMALS	M	2
COUNT THE COWS	M	9
DAIRY OR BEEF?	S	17
DELICIOUS DAIRY	LA	6
DIPPING INTO DAIRY	M	11
DO ANIMALS POLLUTE...?	S	27
DOLLARS AND CENTS	M	13
EGG MAZE: COUNTING BY TWOS, THREES AND FIVES	M	14
EGG-CITING NUMBERS	M	3
FACE YOUR FEELINGS	SS	5
FARM ALPHABET	LA	7
FARM TALK	LA	8
FIND THE FARM ANIMALS	IS	4
FIVE PLUMP PIGS	M	7
FLUFFY FEATHERS	S	10
FOOD GROUPS	S	28
FROM SEED TO TREE	LA	14
GET GROWING	IS	2
GROWING GRAPHS	M	15
HAMBURGER HUNT	VA	10
HAVE YOU THE TIME OF DAY?	IS	5
HEALTHY DECISIONS	S	29
HOME, SWEET NEST	S	18
HOW SEEDS ARE SCATTERED	S	19
I LIKE IT!	VA	13
I'M A FARMER. I'M A RANCHER.	SS	3
IS IT JUST DIRT?	S	13
LINES IN NATURE	VA	3
LISTEN AND LEARN	LA	2
LISTENING TO DIRECTIONS	LA	3
LIVING OR NONLIVING	S	12
MADE FROM ANIMALS	S	20
MATCH THE SHAPES	M	16
MEAT WE EAT	S	1
MEET GRADY THE COW	R	2
MIXED-UP MARKERS	LA	13
MOO'S WEIGHT	M	17
MOO...SAID GRADY THE COW	VA	11
MY FARM FRIEND	R	4
OFF TO WORK	SS	6
OKLAHOMA FARM COLORS	SS	2
OKLAHOMA FORESTS	SS	7
OUR BASIC FOODS	S	2
PEANUT BUTTER AND...	S	3
PEANUT PATCH	M	18
PECAN FINGER PRINTS	SS	4
PIZZA PARTS	S	30
PLANT PARTS WE EAT	S	21
PLANTS LOVE AIR	S	4
POP AROUND THE WORLD	SS	8
POTATO PRINTS	VA	3
POWERFUL POTATO	S	5
PUMP UP WITH POPCORN	S	31
PUMPKIN FACES	M	4
PUMPKINS BY THE POUND	M	22
RANCH AND FARM BOOKLETS	LA	10
READY, SET, PLANT!	S	6
SAND AND SUNFLOWERS	VA	4
SEED SEARCH	S	7
SEEDLINGS	M	19
SEEDS - SEE HOW THEY GROW	S	8
SEEDS FOR THE SEASON	SS	1
SEEDS WE EAT	R	5
SHORT STORIES	IS	6
SOMETHING'S HIDING INSIDE	IS	9
SPROUTING	IS	7
TATER TOTS	M	20
THE COTTON SYMBOL	M	10
THE MILK ROUTE	IS	8
THE REAL SEAL	M	5
THE RIGHT SIZE	M	6
THE STORY OF MILK	IS	3
THE WONDERFUL WATER CYCLE	S	32
THE WOOL SYMBOL	S	9
THIS IS A COW	LA	11
TIME TO EAT	M	21
TOMATO PLANT PARTS	S	22
TREE PARTS	R	6
WATER - WHAT'S ITS MATTER?	R	7
WE FURNISH YOUR FOOD	S	33
WEAVING WOOL	VA	12
WET AND WOOLY	S	23
WHAT HAPPENED?	R	1
WHERE'S THE BEEF?	S	34
WHICH CAME FIRST, THE CHICKEN OR THE EGG?	LA	12
WHICH ONE IS DIFFERENT?	VA	5
WHO'S IN THE HEN HOUSE?	VA	9
WHO'S WHO	S	24
WONDERS OF WOOL	VA	6

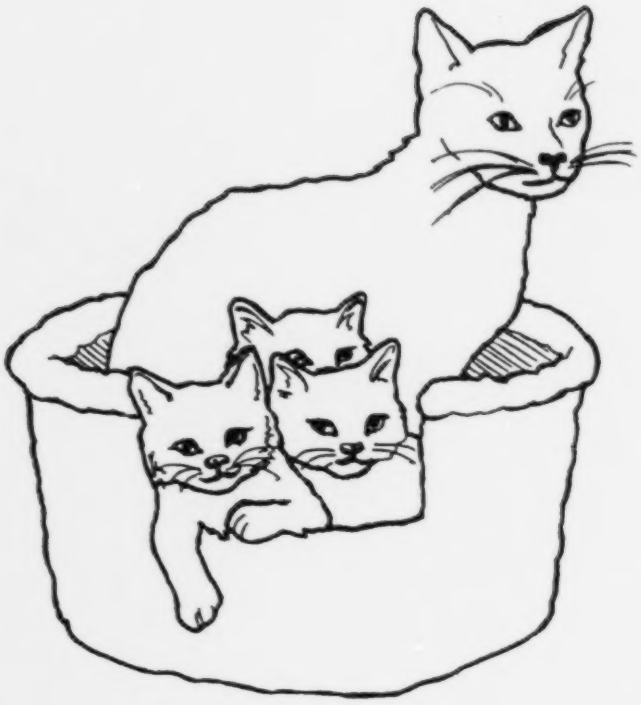
Name _____

Acorn

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

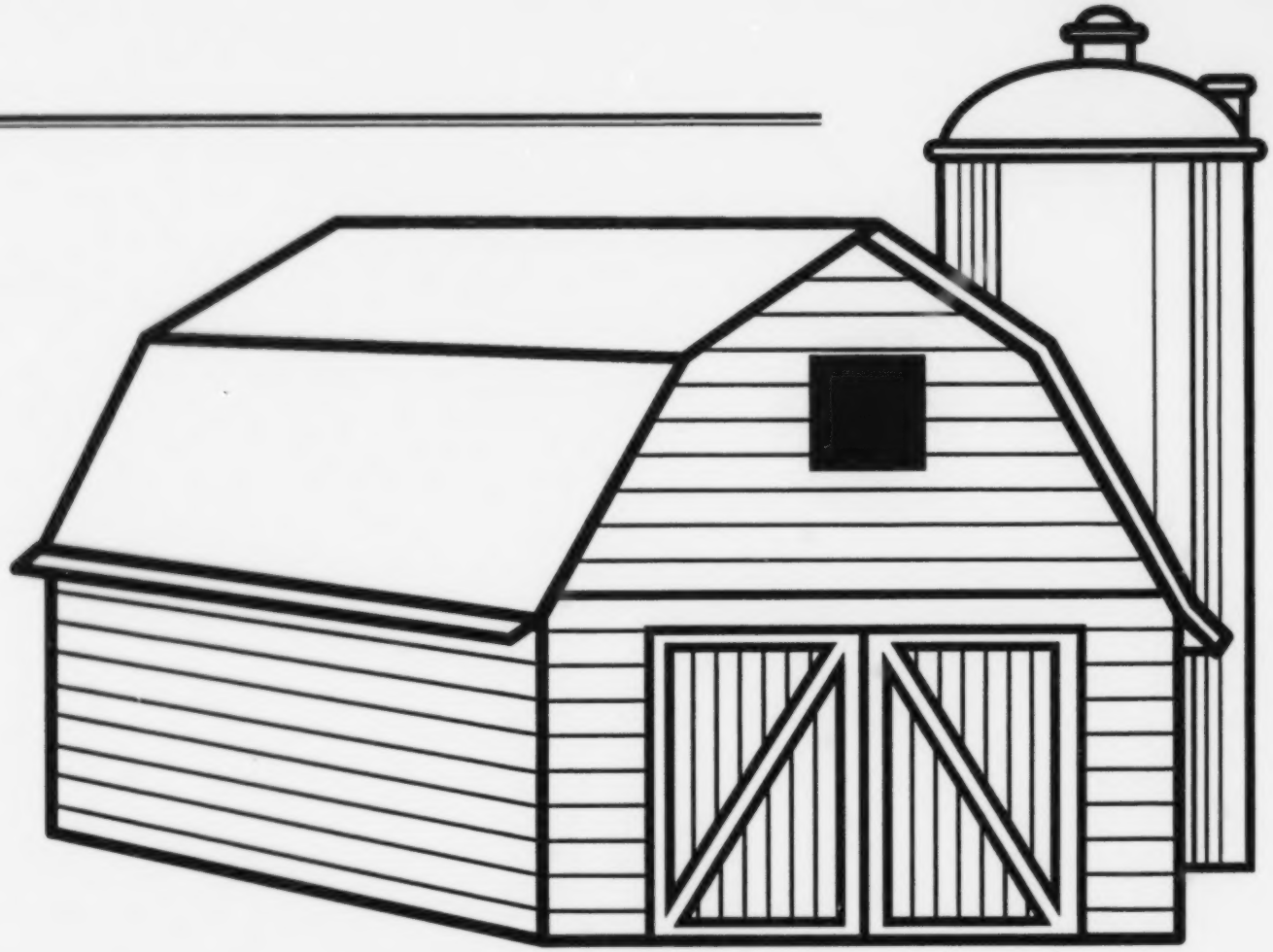
Pattern 1

Animals



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Barn



Pattern 3

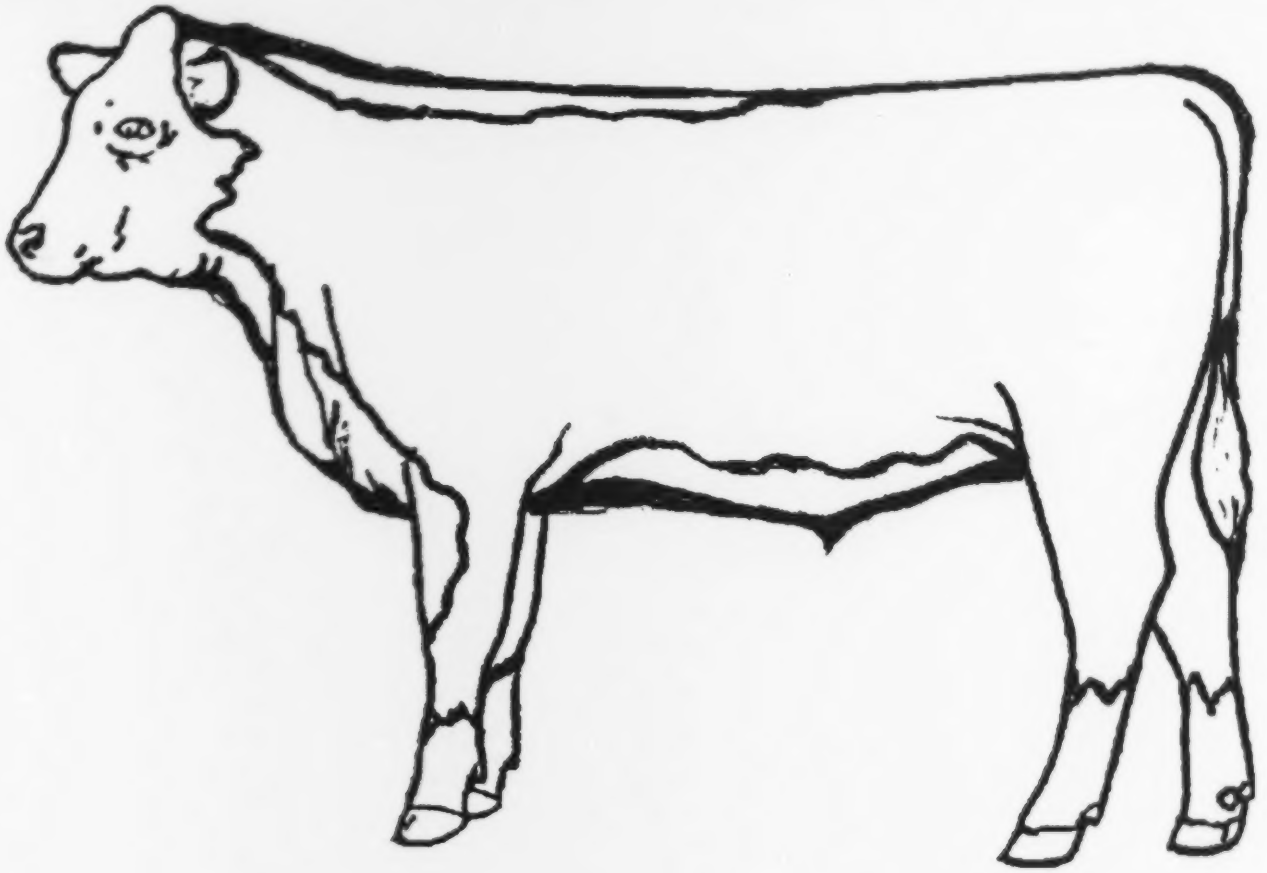
213

214

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Ag in the Classroom

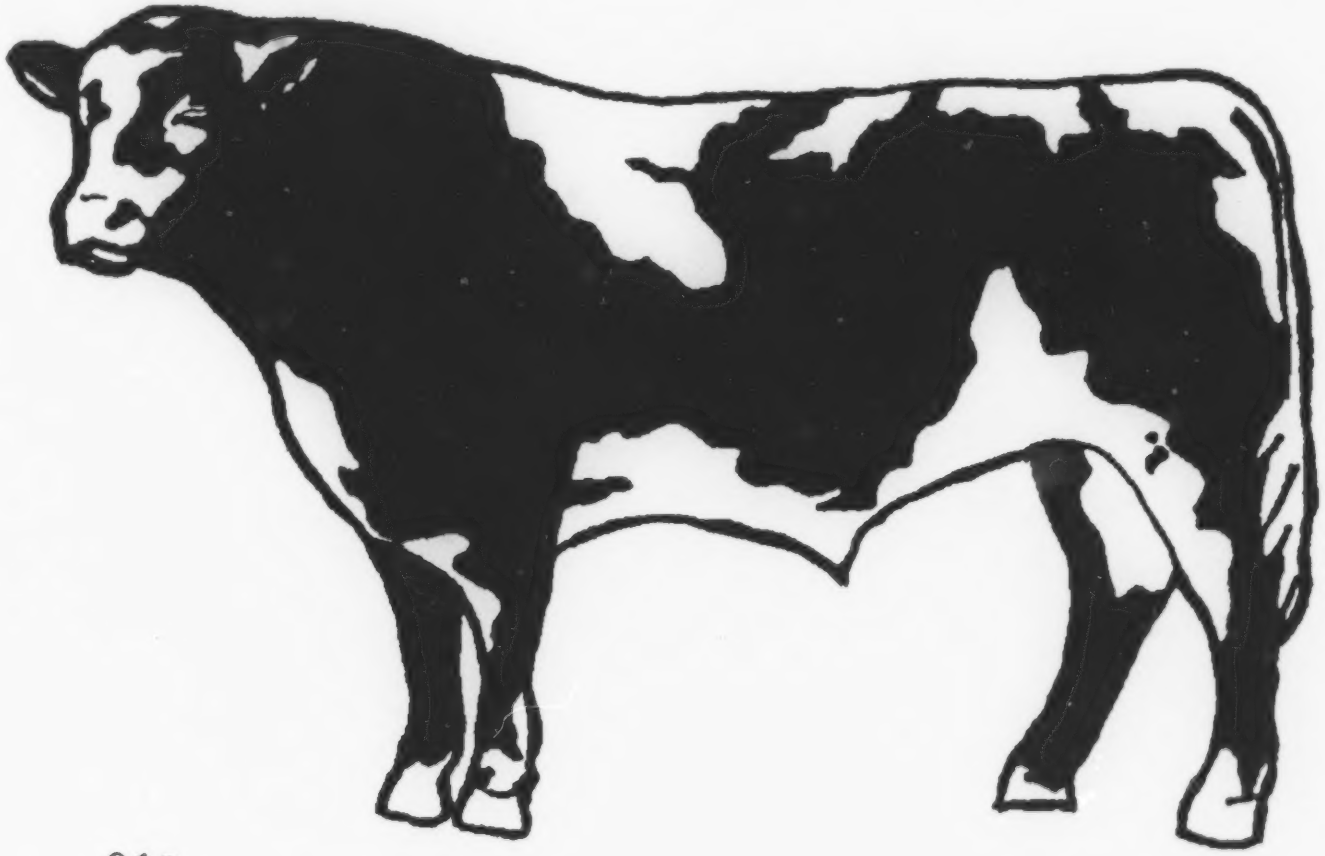
Beef Steer



Pattern 4

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Bull



Pattern 5

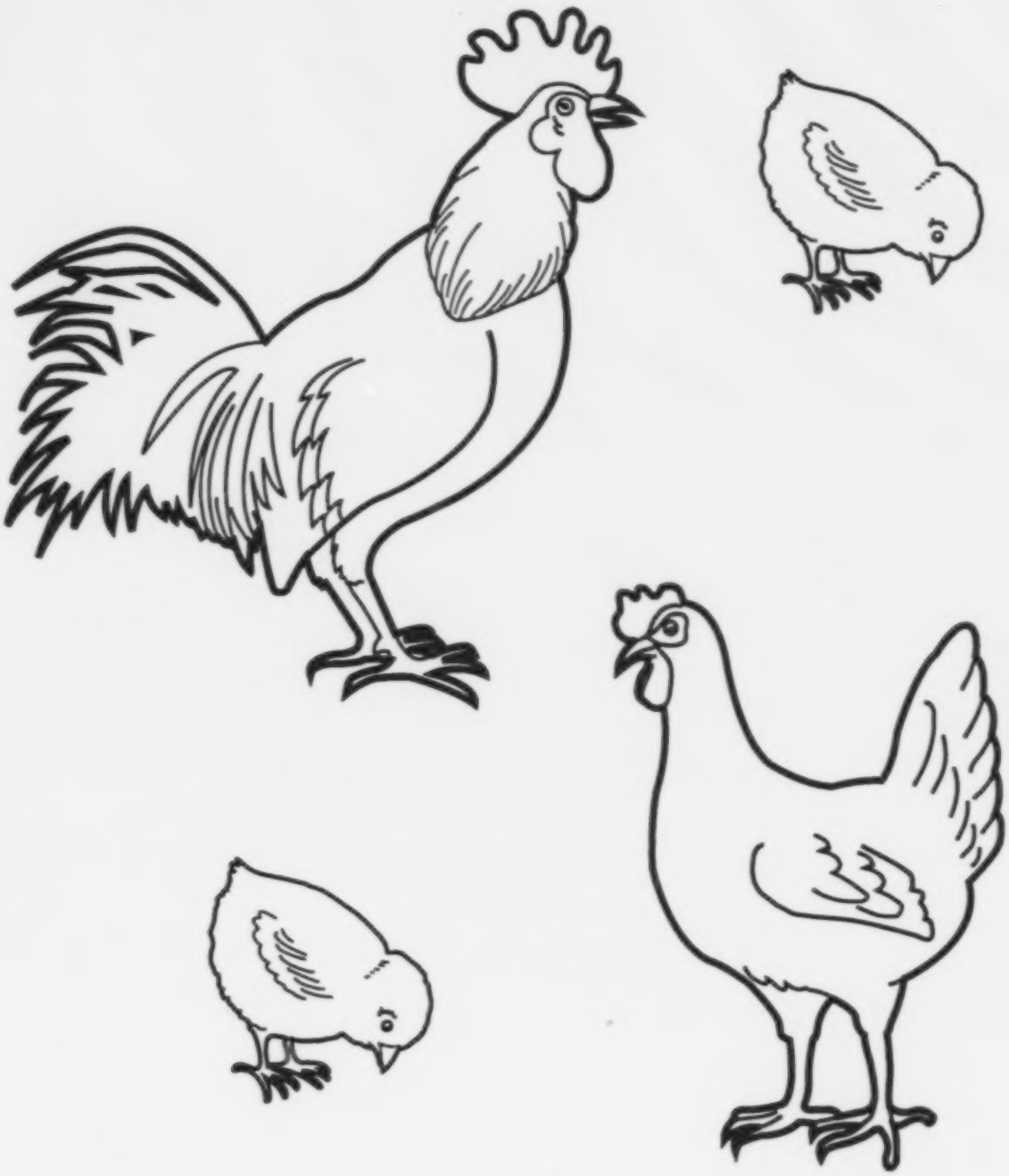
217

218

Produced by Oklahoma State University Cooperative Extension Service
in cooperation wtih the Oklahoma Department of Agriculture, 1992

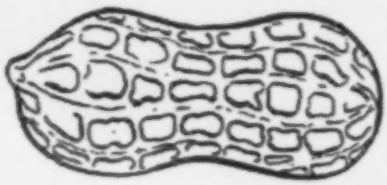
Ag in the Classroom

Chickens



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Commodities



peanut

pecan

acorn

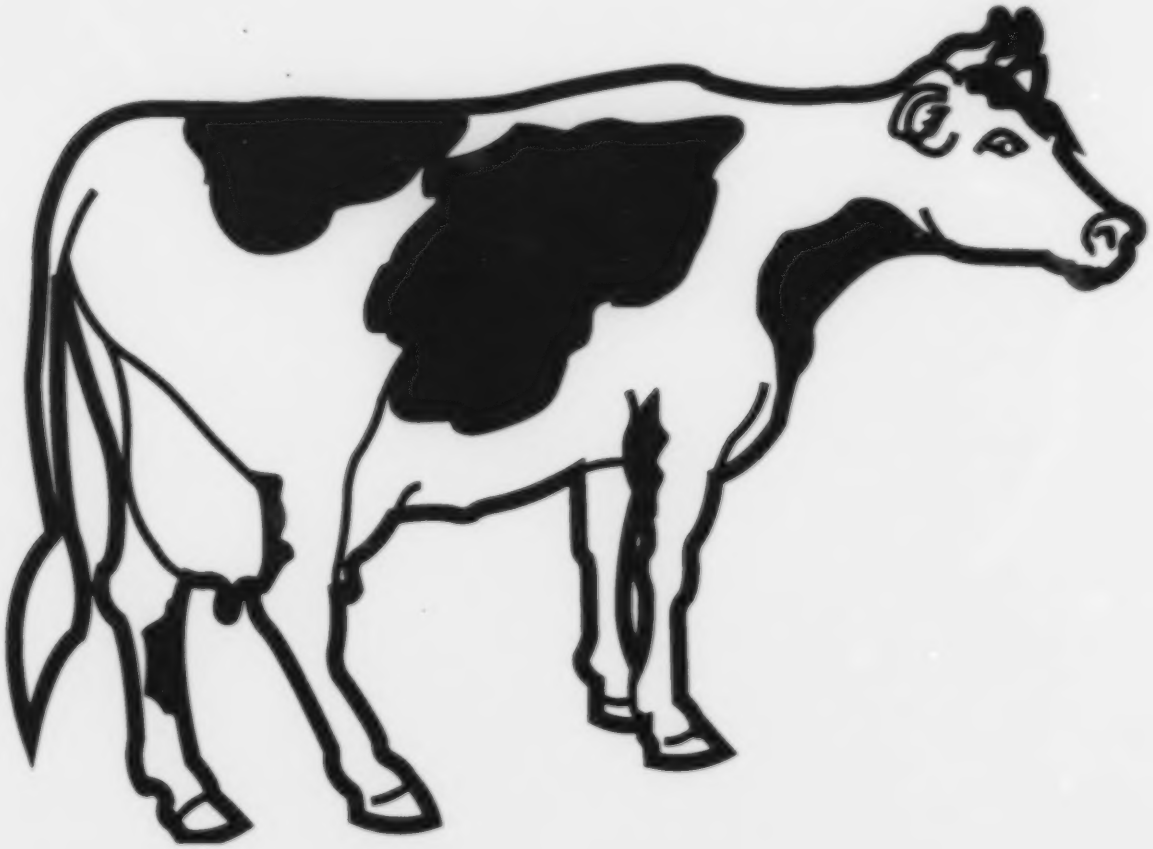
popcorn

wheat

cotton boll

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

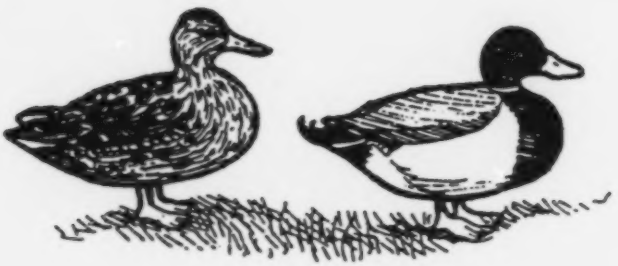
Dairy Cow



Pattern 8

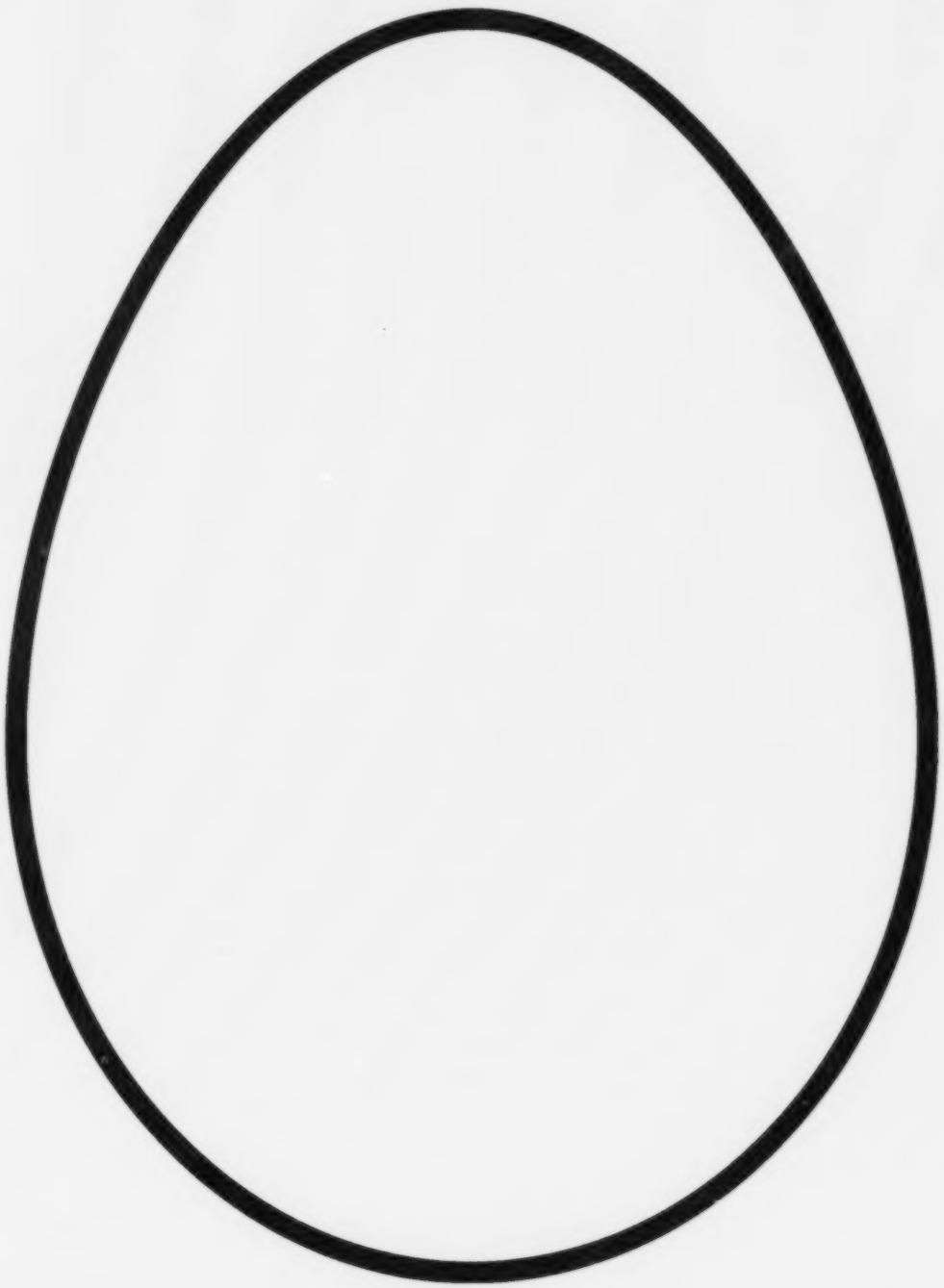
Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Ducks



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

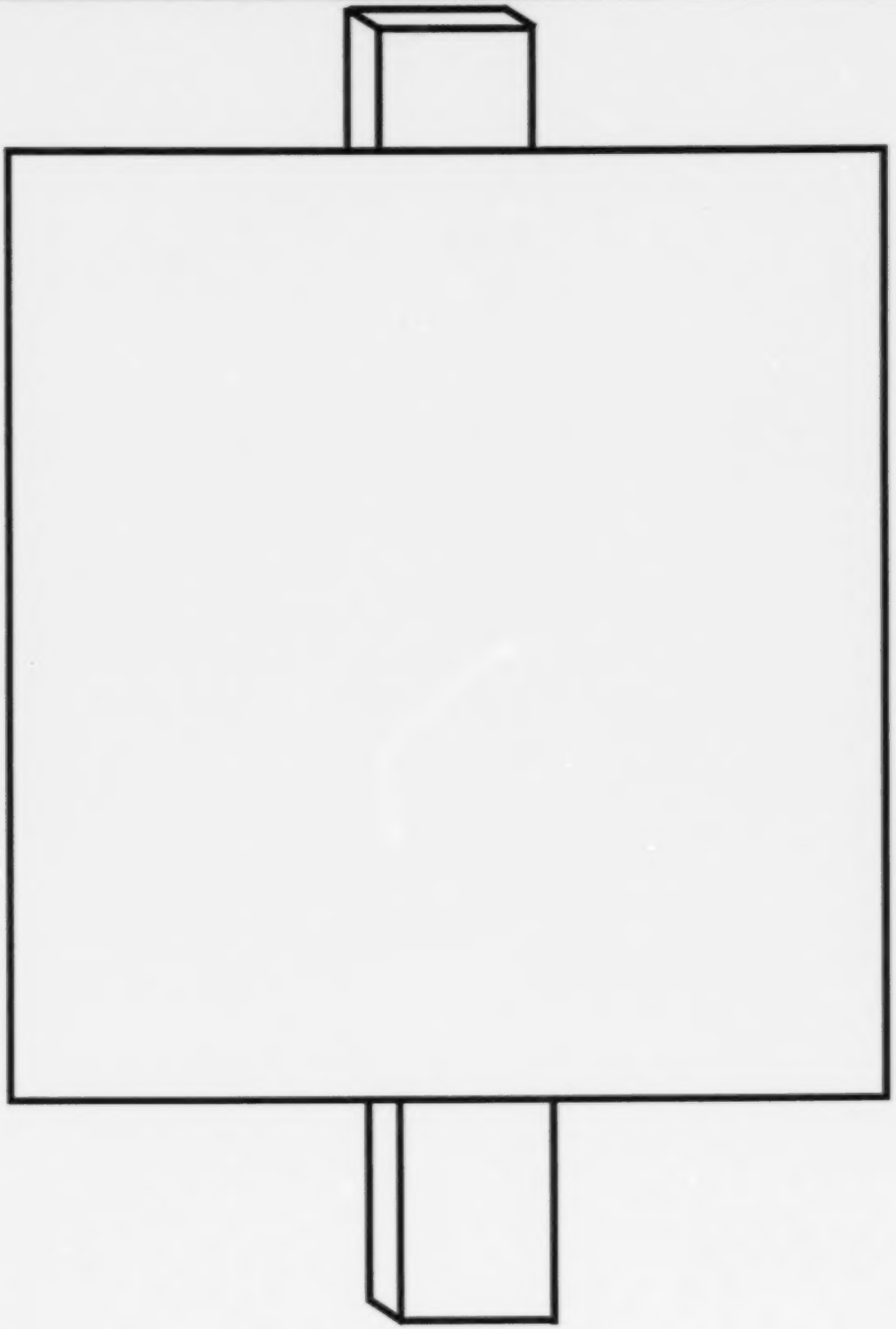
Egg



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Pattern 10

Garden Marker



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Pattern 11

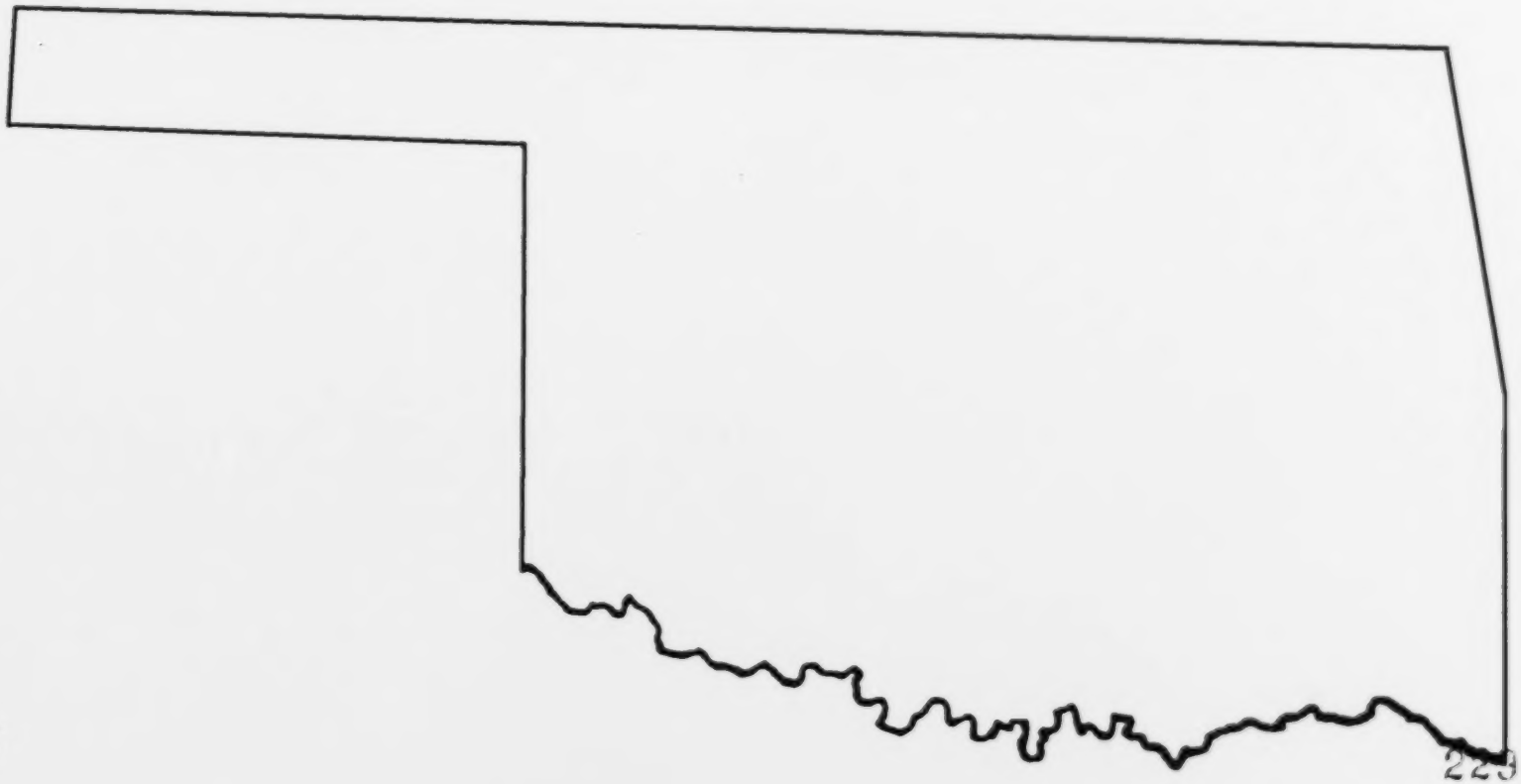
Oklahoma Counties

Pattern 12

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Ag in the Classroom

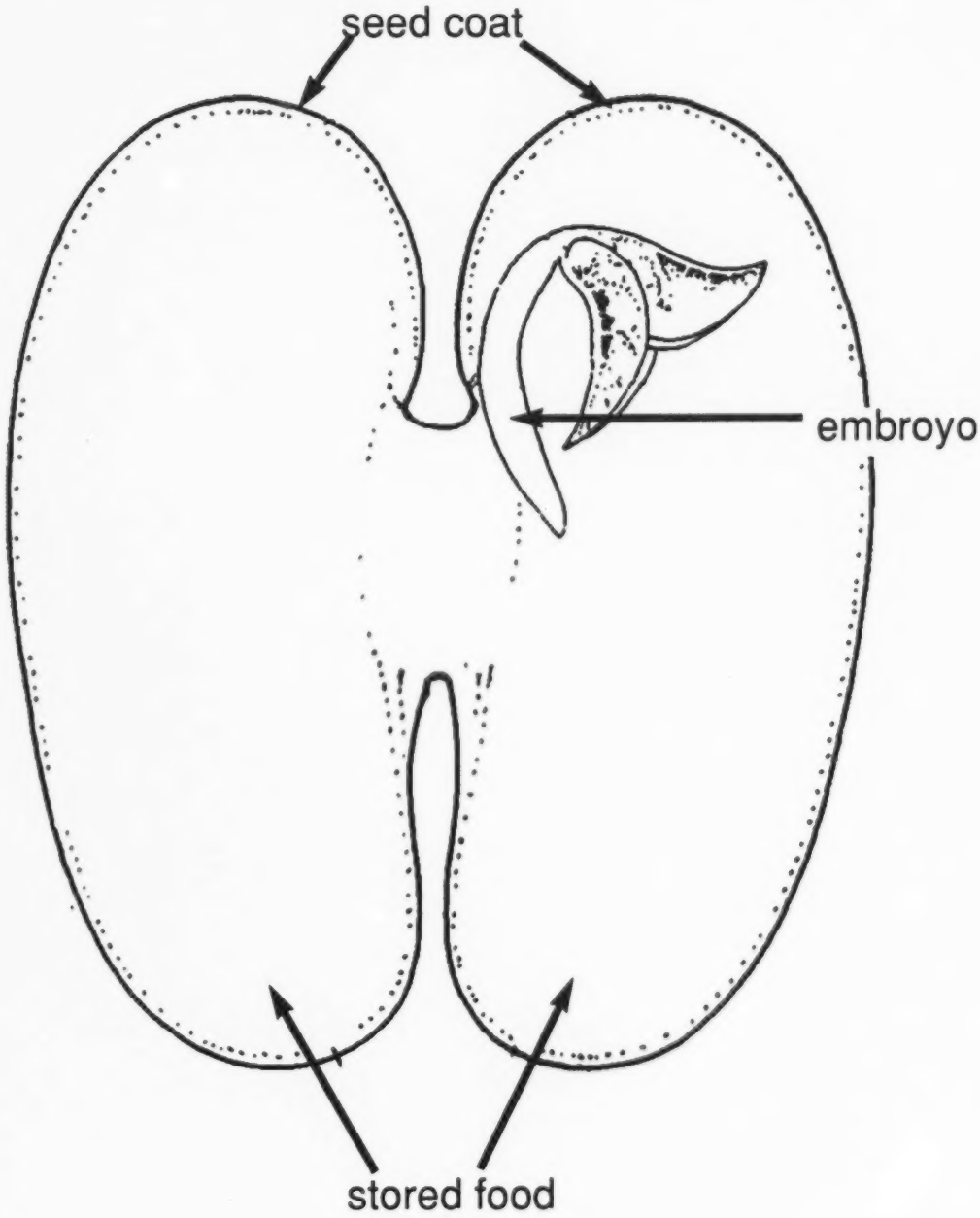
Oklahoma Map



Pattern 13

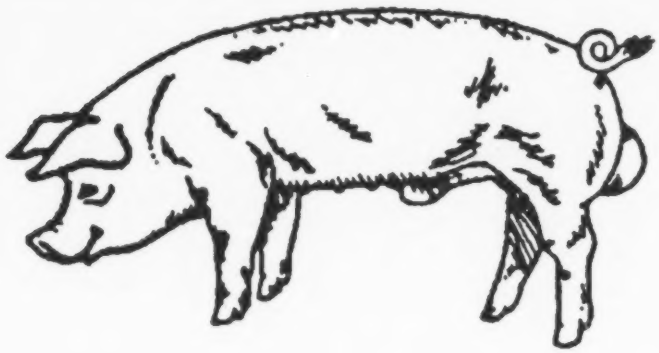
Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

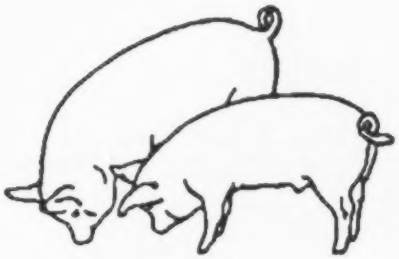
The Parts of a Seed

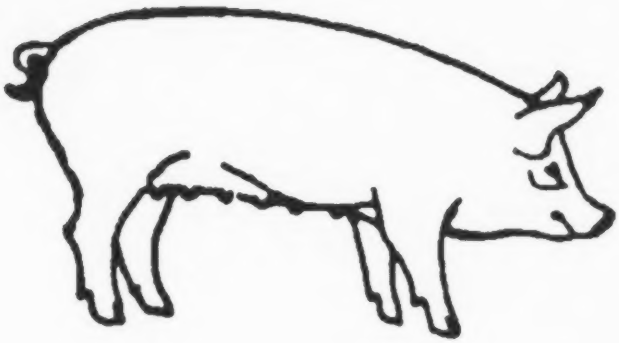


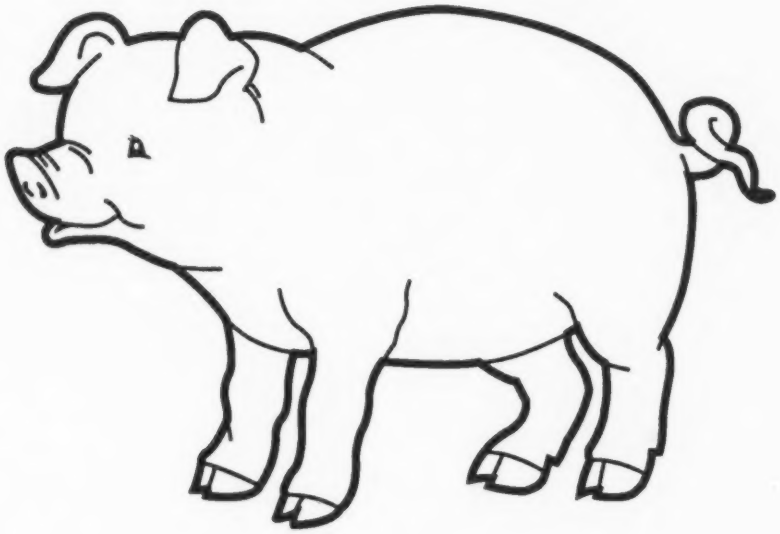
Produced by Oklahoma State University Cooperative Extension Service
in cooperation wtih the Oklahoma Department of Agriculture, 1992

Pigs



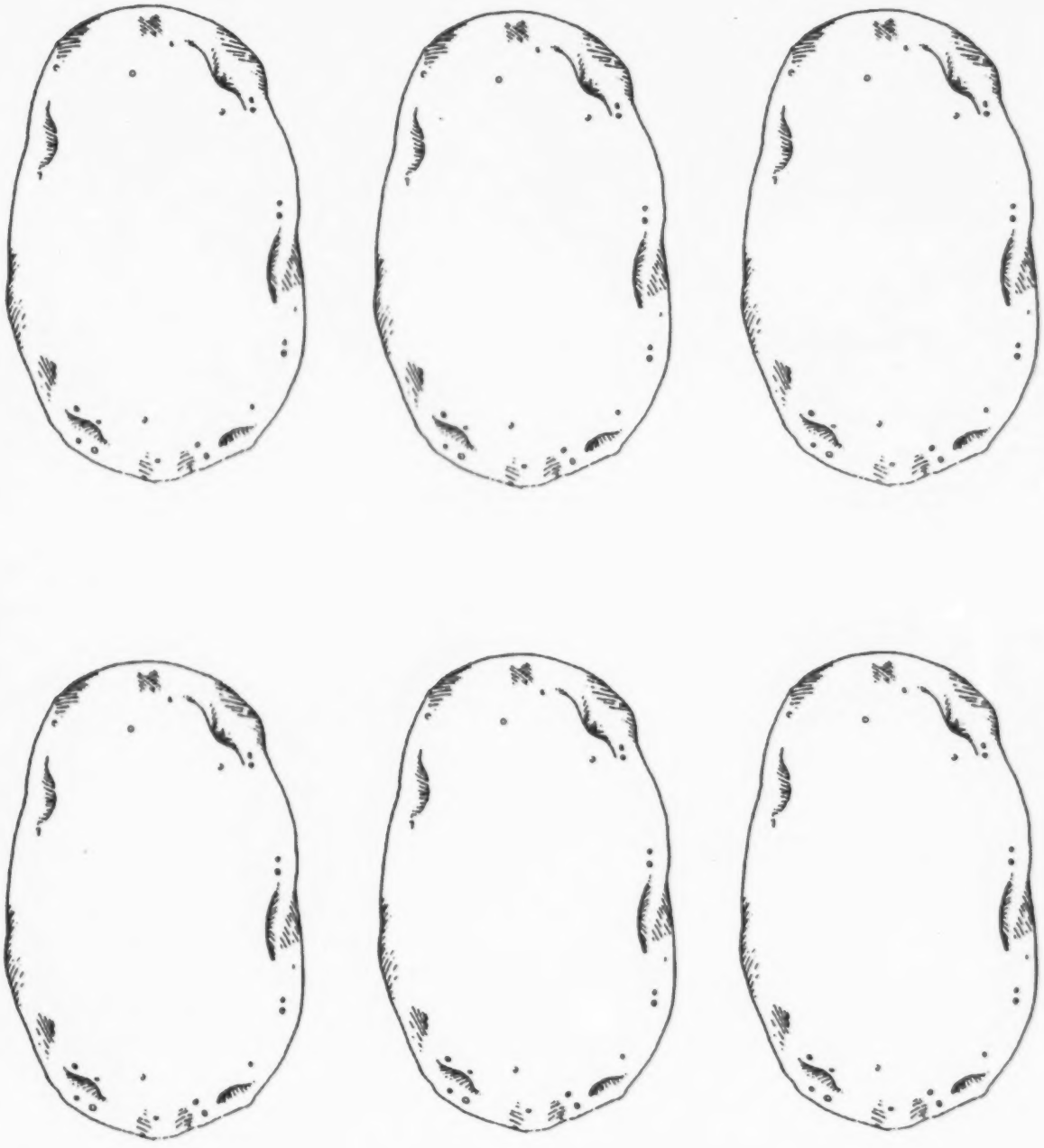






Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Potatoes

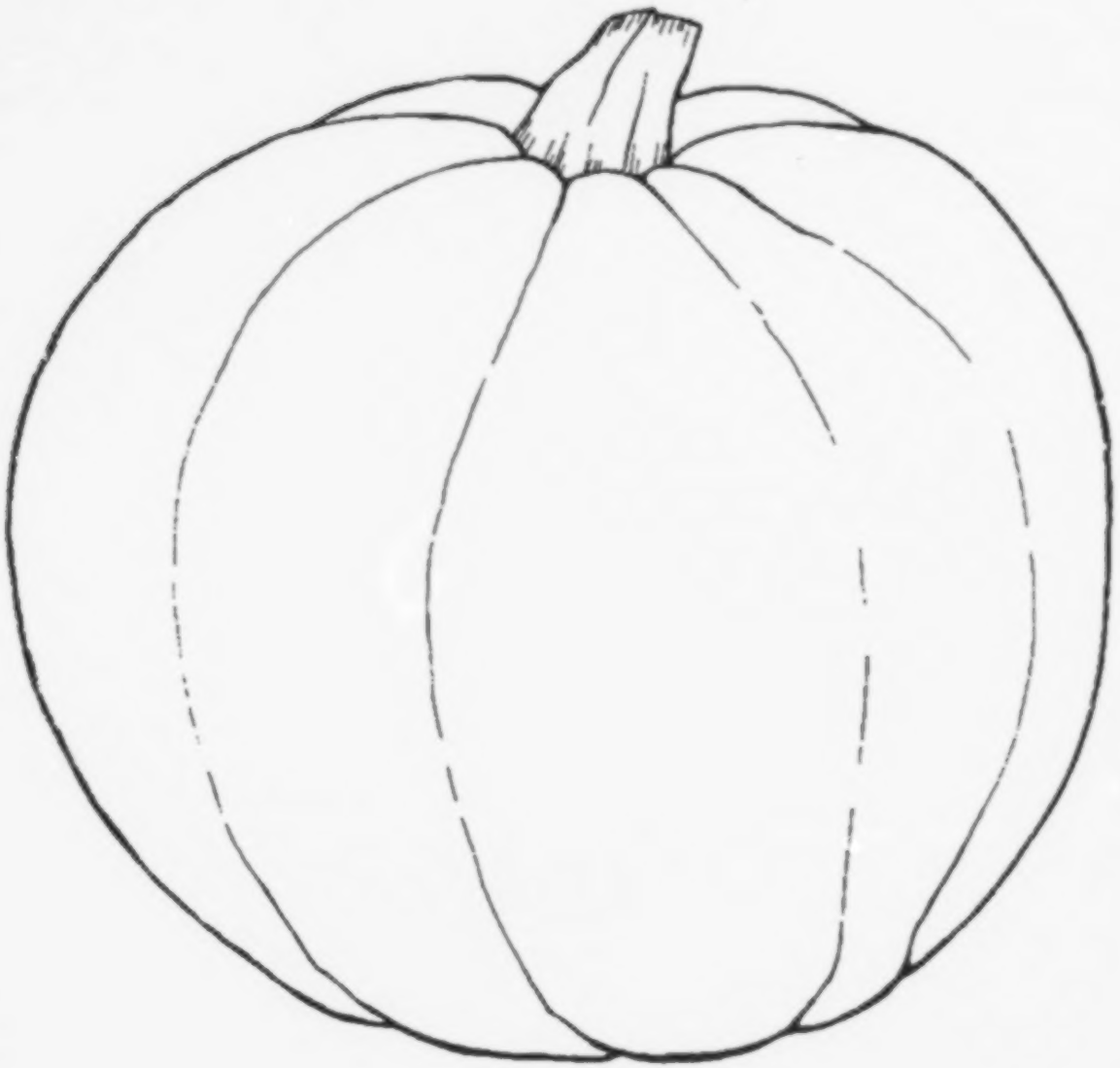


Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Pumpkin

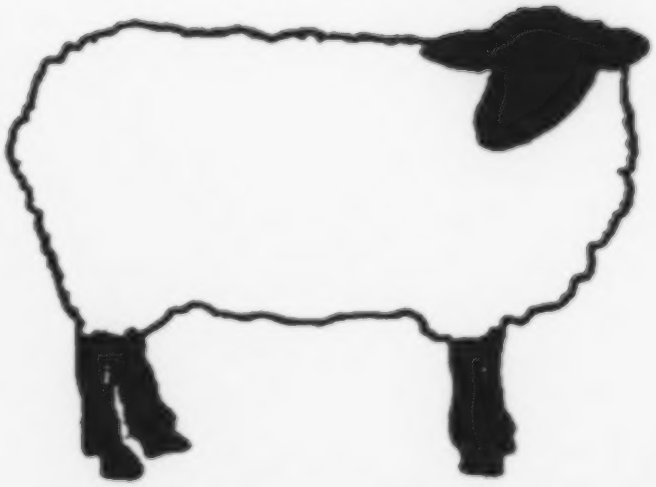
Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Pumpkin



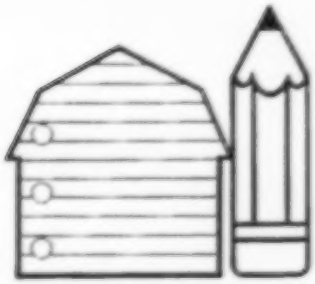
Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Sheep



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Symbols



national Ag in the Classroom logo

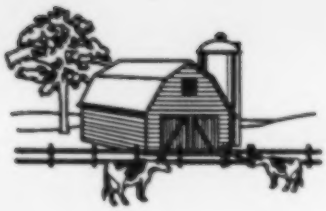
dairy "real seal"

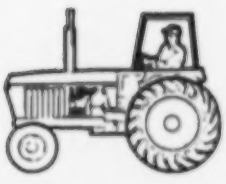
Oklahoma Ag in the Classroom logo

cotton symbol

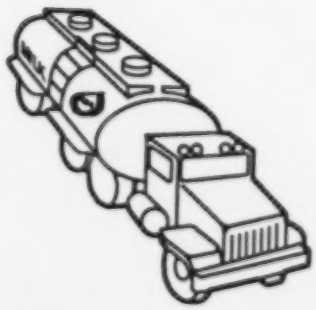
wool symbol

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992





Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

Writing Page

Produced by Oklahoma State University Cooperative Extension Service, in cooperation with the Oklahoma Department of Agriculture, 1992.

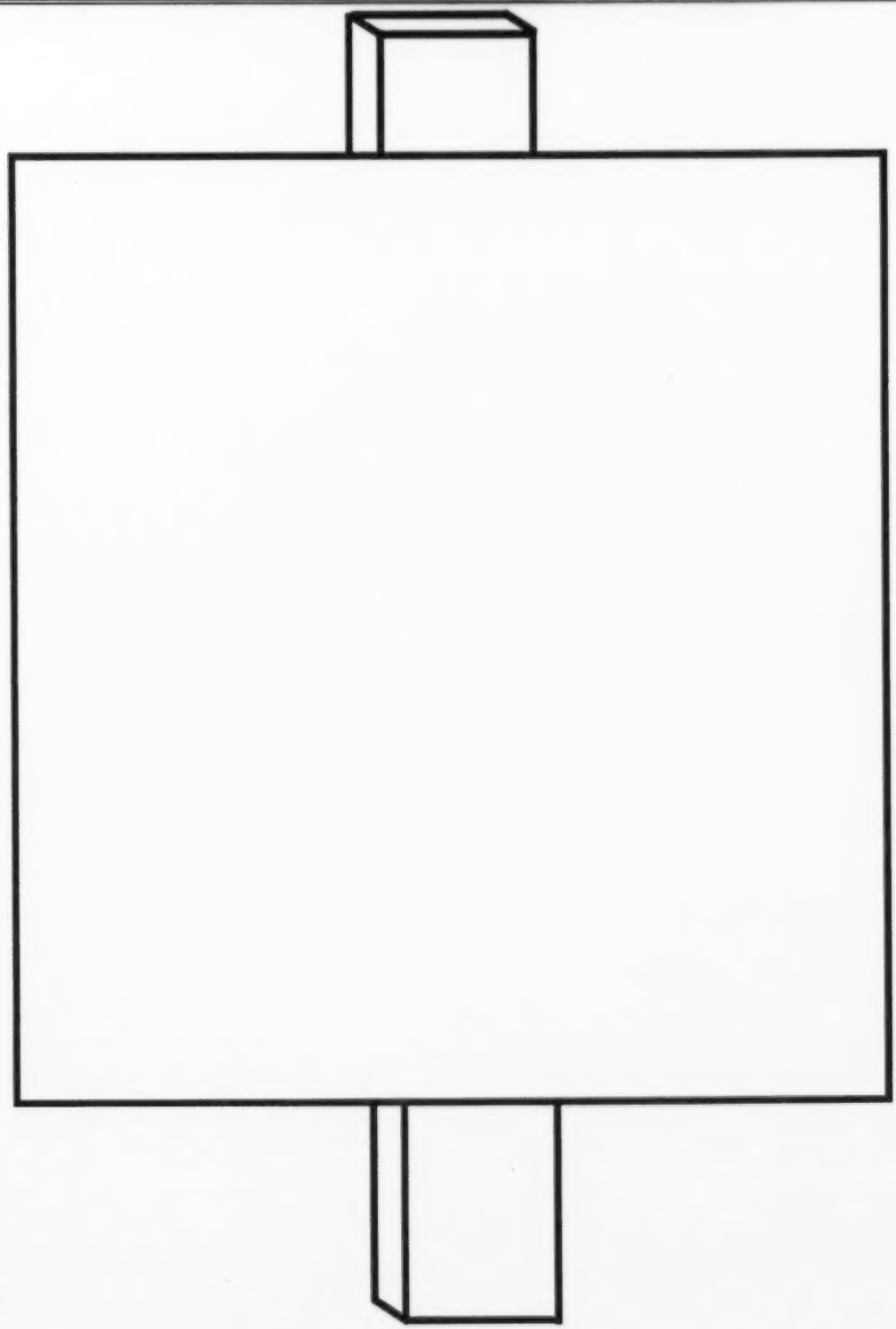
Name _____

Writing Page

Produced by Oklahoma State University Cooperative Extension Service, in cooperation with the Oklahoma Department of Agriculture, 1992.

Name _____

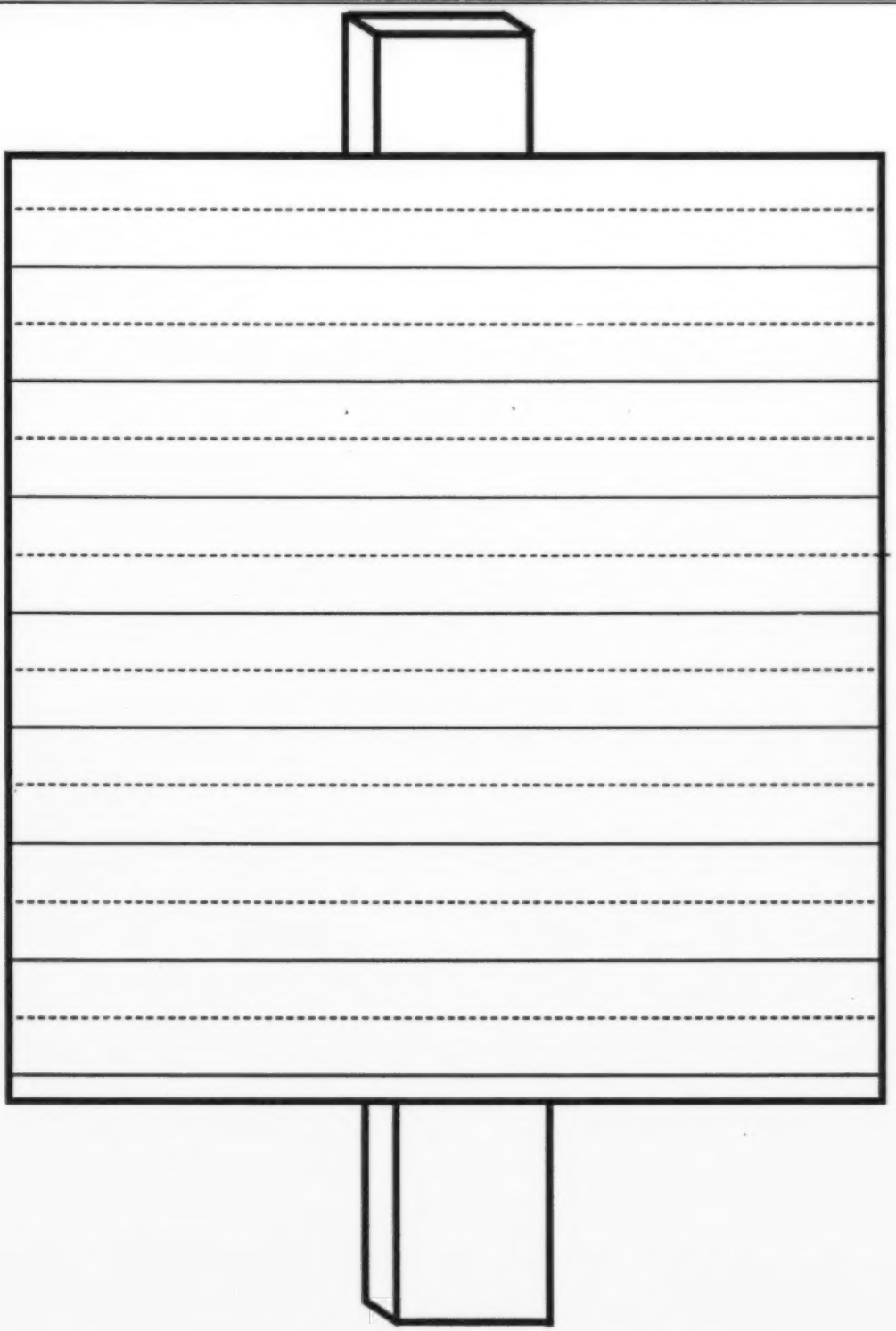
Garden Marker Writing Page



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

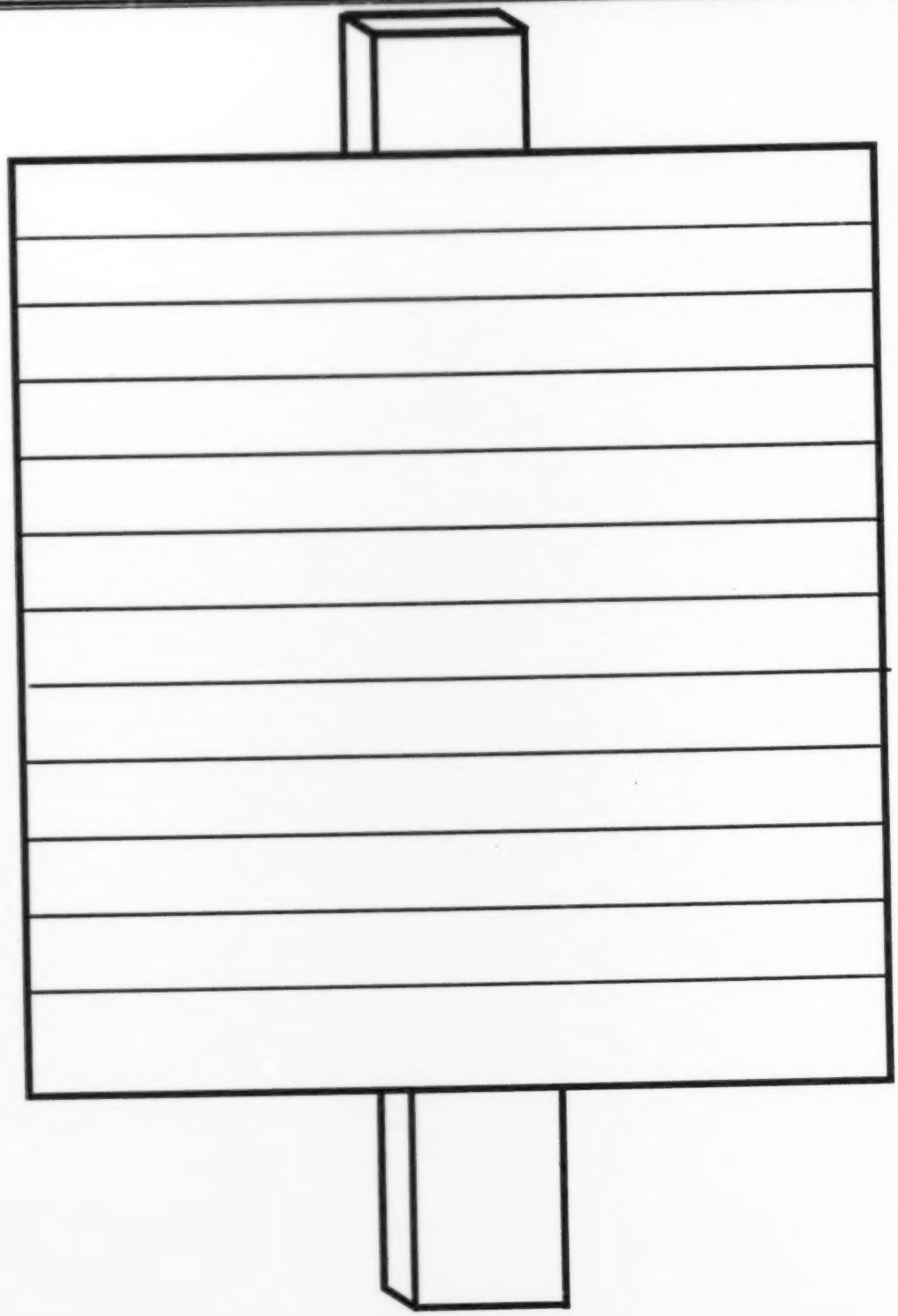
Garden Marker Writing Page



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

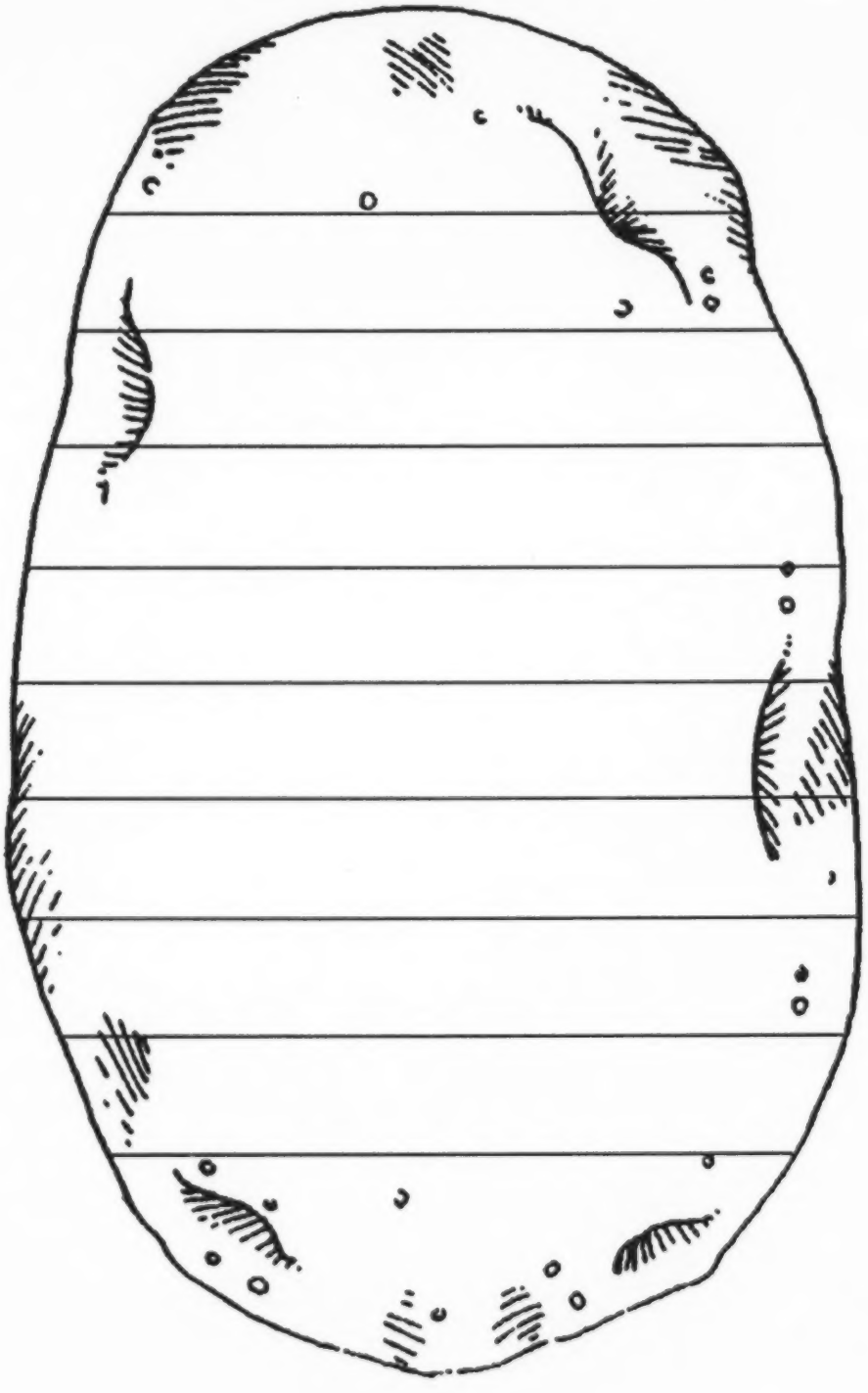
Garden Marker Writing Page



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Name _____

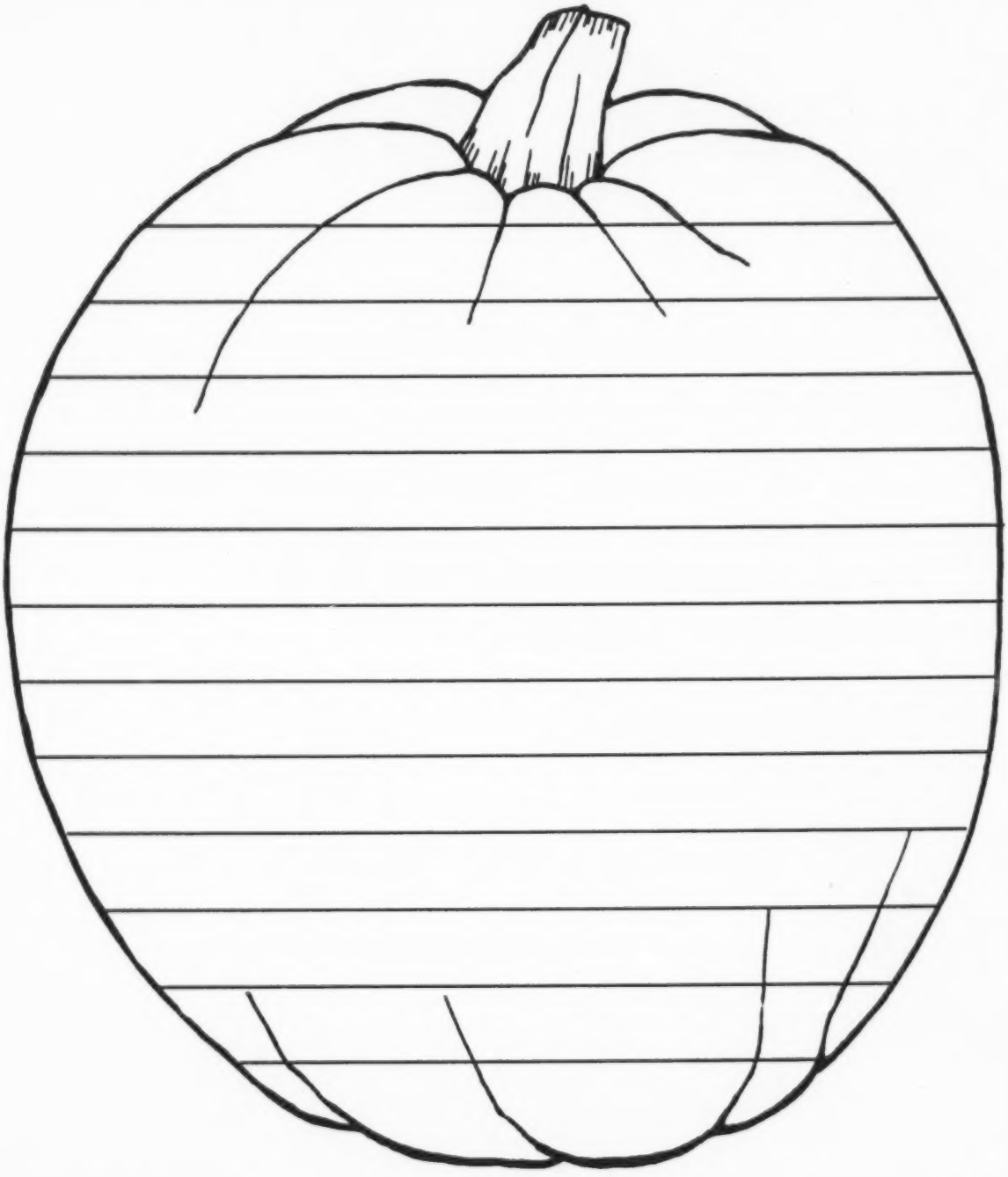
Potato Writing Page



Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

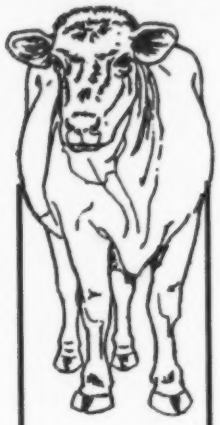
Name _____

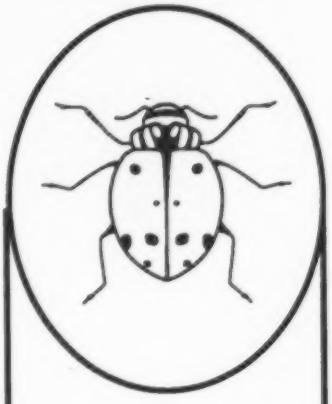
Pumpkin Writing Page

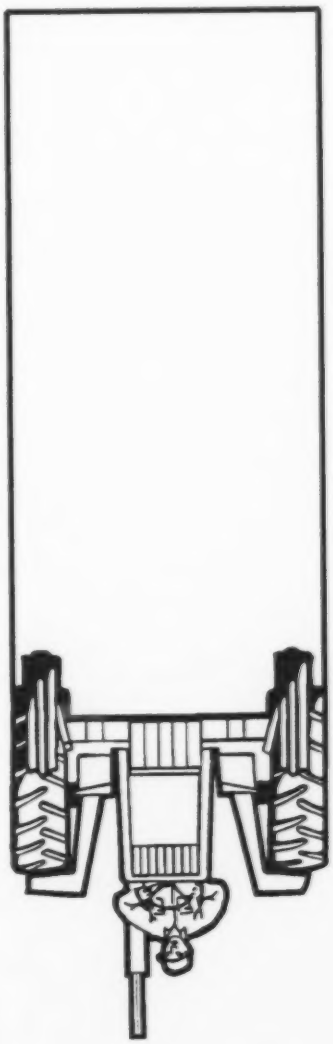


Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Book Marks





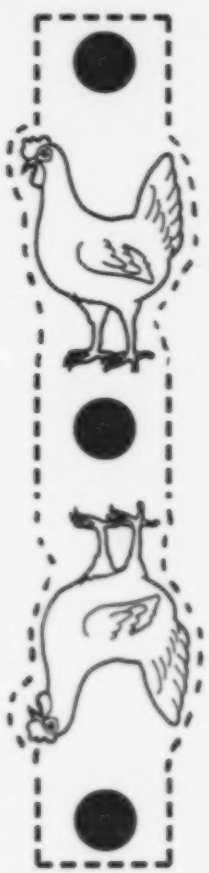


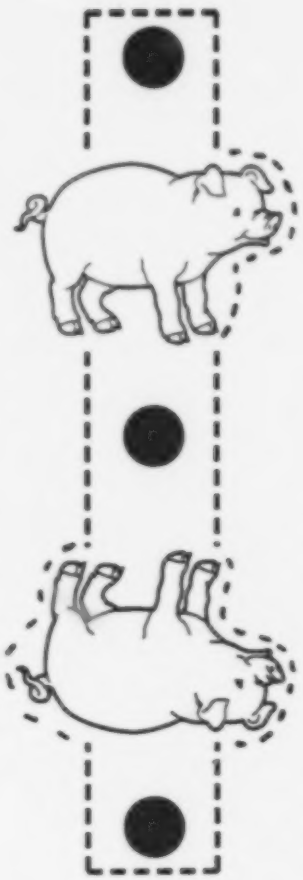
Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

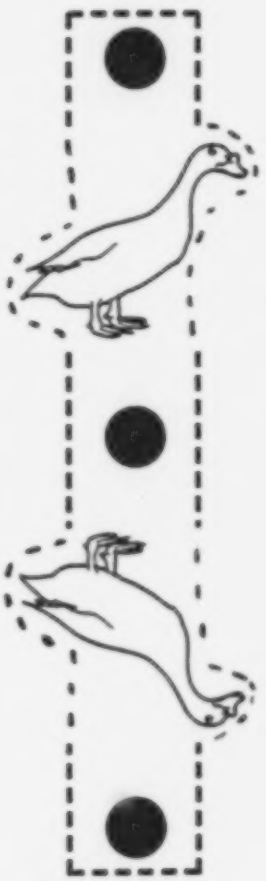
Name _____

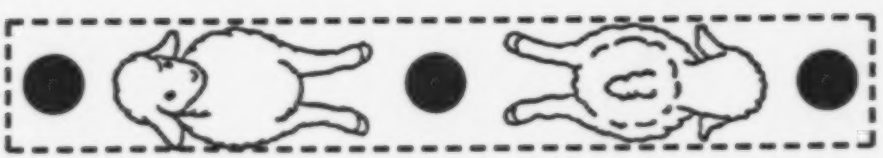
Farm Animal Pencil Toppers

Color the pictures and punch the dots. Bring end dots together and slip pencils through .









Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

You have worked hard to beef up your grades.

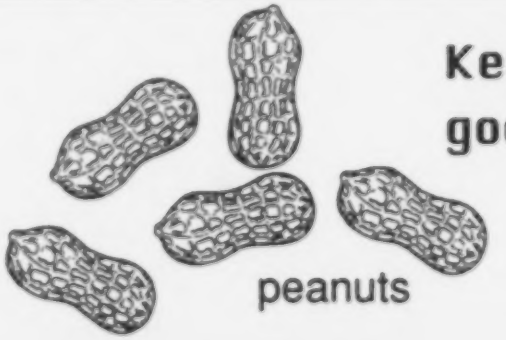
You have put moo power to work.

Good job!

Ag in the Classroom

I`m nuts over your

pecans



peanuts

Keep up the good work!

Ag in the Classroom

A farmer
works hard to keep
a spotless stall
for the animals.

You work hard to keep
your desk neat.

Thank you for your
spotless stall.

A farmer
works hard to keep
a spotless stall
for the animals.

You work hard to keep
your desk neat.

Thank you for your
spotless stall.

Name _____

Watch It Grow

Monday	Tuesday	Wednesday	Thursday	Friday

1. *Write the date in the small box in the top left corner every day.*
2. *Measure the height of your plant every day, and record in centimeters or inches.*
3. *Draw a picture of your plant every day in the large calendar box.*

Produced by Oklahoma State University Cooperative Extension Service
in cooperation with the Oklahoma Department of Agriculture, 1992

Ag in the Classroom is jointly administered by the Oklahoma 4-H Youth Development Department, Cooperative Extension Service and the Oklahoma Department of Agriculture